DOCUMENT RESUME

ED 065 937 EA 004 521

TITLE	School Renewal. A Report Suggesting Ways That Any School System Might Approach a Total School Modernization Program.
INSTITUTION	McLeod, Ferrara, and Ensign, Washington, D.C.
SPONS AGENCY	Educational Facilities Labs., Inc., New York, N.Y.; West Hartford Board of Education, Conn.
PUB DATE	72
NOTE	191p.
AVAILABLE FROM	Educational Facilities Laboratories, Inc., 477 Madison Avenue, New York, N.Y. 10022 (Free)
EDRS PRICE	MF-$0.65 HC-$6.58
DESCRIPTORS	Building Plans; *Case Studies; *Cost Effectiveness; Early Childhood Education; Educational Objectives; *Facility Guidelines; *Facility Requirements; Feasibility Studies; Grade Organization; Individualized Instruction; Instructional Materials Centers; Open Plan Schools; Planning (Facilities); *School Improvement; Site Analysis; Special Education
IDENTIFIERS	Connecticut; Faculty Study Centers; West Hartford

ABSTRACT

This study attempts to suggest that, with sensitive planning, obsolete but sound old buildings can be recycled to accommodate new educational concepts. The report first suggests guidelines for a school district to consider in implementing a total modernization plan. Then, a case study of a feasibility plan for West Hartford, Connecticut, is presented. A portfolio of 18 suggested modernization plans for the schools in West Hartford concludes the presentation. (Photographs and charts may reproduce poorly.) (Author/EA)

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a report
suggesting
ways that any
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might approach
a total school
modernization
program

prepared by

mcleod, ferrara and ensign, aia

supported by

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part I: school renewal

part II: west hartford study

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school renewal : foreword

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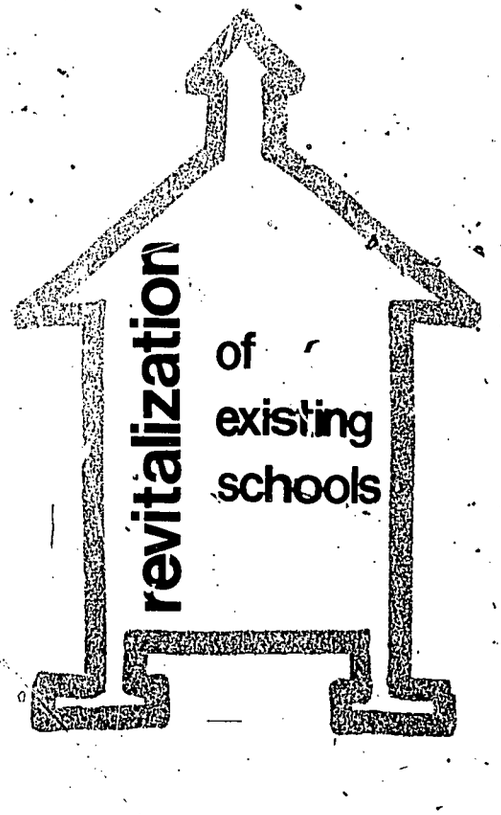
foreword

Communities throughout the land are caught in the vise of economic reality: prices continue to escalate, there are increasing demands for public funding of social programs and there just is not enough tax revenue to spread around. Education vies with programs in health, sanitation, welfare, the environment, drug rehabilitation, crime prevention and others for its share of public support. As taxes have been pushed upward to meet these pressing needs, taxpayers' resistance has stiffened. Voter acceptance of school capital programs is low. The nation is short about 3/4 million classrooms, yet in 1970 about one-half of the bond referendums were defeated and approximately $1.7 billion were thus curtailed from capital improvement programs. This is a dramatic change in attitude from the peak year of 1965, when voters approved three-fourths of all bond referendums.

School facilities constitute only a fraction of the total cost of education - but a very visible fraction. When money is scarce, as it is now, construction for education becomes highly vulnerable; the search for techniques, materials and processes that can help to keep the lid on building costs becomes more important than ever. Increasingly, therefore, we hear of Systems Building, Fast Tracking, Construction Management, Joint Occupancy, Encapsulated Space, The Everywhere Schools, Human Resource Centers, Expanded School Year - terms that although descriptive of quite different concepts, have as a common denominator the promise of reduced costs. In line with these trends, it is becoming clear that the greatest potential for cost savings in the decade ahead lies in economical modernization of our existing schools.



Present schoolhouses constitute a tremendous investment, and realistically they cannot be soon abandoned and replaced. Nor should they be. Age itself need not be the sole indicator of obsolescence, and our national conscience now recognizes this fact. Over 1/4 million of our classrooms and over one-third of our schools in large urban areas have been in use for over half a century. In their present state, most are incapable of meeting today's demands, and the challenge is to recognize the potential of these venerable buildings and renew them to serve useful contemporary functions. Added to the problem of the aged schools is the unpleasant fact that many of the facilities completed in the last few years have rigid plans and structures that seriously hinder the processes of learning used today. These too need a new lease on life.

Renovations and additions have always been an important part of annual school outlays, constituting in the past few years almost one-third of the total educational construction dollar volume. The emphasis, however, has been on replacement and repair of equipment and materials and on updating to meet safety codes; meeting building standards, in other words. But it is predictable that within a few years the share of the dollar spent for modernization will pass the 50 percent mark, and much greater emphasis will be spent on making our outmoded buildings serve new educational standards.

The possibilities of using existing buildings for effective educational programs extends beyond updating traditional schoolhouses. In our society, populations shift rapidly. Facilities and services essential at one time become available for other needs. In the past

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The possibilities of using existing buildings for effective educational programs extends beyond updating traditional schoolhouses. In our society, populations shift rapidly. Facilities and services essential at one time become available for other needs. In the past we have not been alert to such opportunities, but more and more, noneducational buildings are being converted to school purposes. Warehouses, office buildings, bowling alleys, shops and churches are thus experiencing new forms of useful life.

Modernization in itself is not the panacea for the school system's economic ills but it is an important option available to the prudent administrator. Remodeling generally has been performed on individual schools in response to specific inadequacies. Now however, we should consider it part of a system-wide opportunity to meet today's educational goals at a price we can afford.

This study is divided into three parts. The first suggests guidelines for a school district to consider for implementing a total modernization plan. The second is a case study of a feasibility plan for a specific town, West Hartford, Connecticut. The third is a portfolio of suggested modernization plans for the schools in West Hartford.

Educational Facilities Laboratories felt that the concept of a comprehensive study of a system wide rehabilitation program was important and of more than purely local interest. For this reason EFL has helped support the publication of this report with the hope that other communities with similar problems might benefit from the pioneering approaches of this one town's search for answers. The study will have served a useful purpose if it does no more than suggest that with sensitive planning obsolete but sound old buildings can be recycled to accommodate new educational concepts.

the process of modernization

Modernization should be part of a well thought out, long-range master plan.

Frequently in the past the quality of the individual schoolhouse and the facilities, equipment, staff and programs offered in it have been determined in large measure by the interest and power of the principal and the influence of the local PTA. Vast educational and environmental inequities between schools within the same system has been the result. Recent court decisions have voided these practices within many jurisdictions, possibly even state-wide.

A master plan can even out the existing highs and lows by establishing unified criteria and applying these to both old and new facilities. By balancing enrollments between overcrowded and underutilized schools and by planning cooperative specialized programs that take advantage of shared responsibility, a master plan can also save money. But these schemes involve human and financial resources and effective management. Programming and planning take team effort and the make up of the team gets broader all the time. Almost daily, the news media covers some aspect of public reaction to school programs. Be it busing, building costs, individualized learning, open planning or sex education, people are having their say - and loudly. No major school program can be successful today without broad citizen support.

This does not mean that the local school community must lose its voice in neighborhood school problems. To the contrary the trend is toward more local control. Local involvement, however, must be established within a definite framework of overall policy.

Modernization, in fact, may undergo even more scrutiny by the community than new school construction. The existing scho sits firmly in its neighborhood, rooted for better or for worse in the tradition of the past. The community's attitude towards the school can never be second-guessed, but it must be uncovered. It will have a potent influence on future p

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An overall school facilities program for keeping buildings up to date is a continuing process that keeps catching itself by the tail:

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modernization

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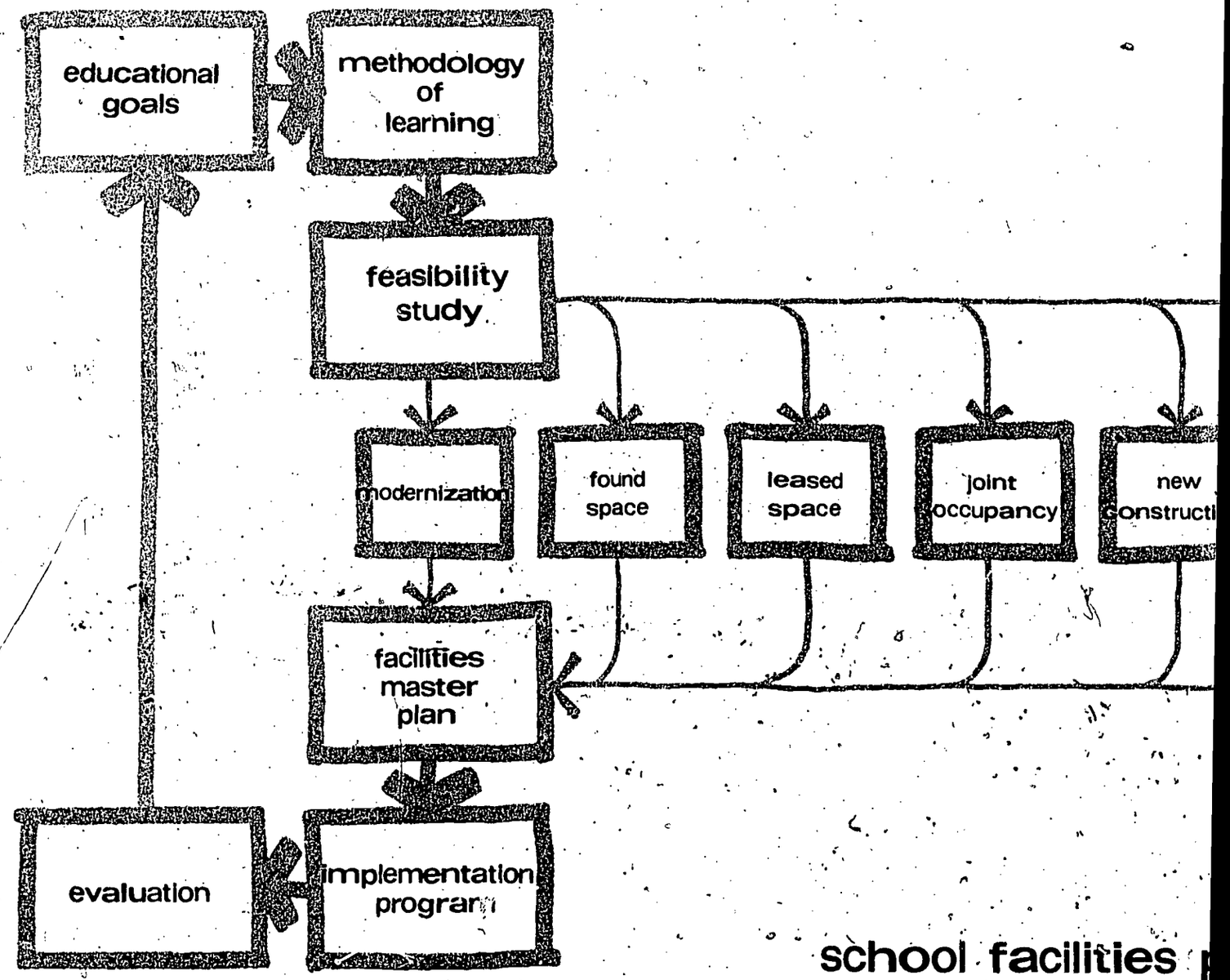
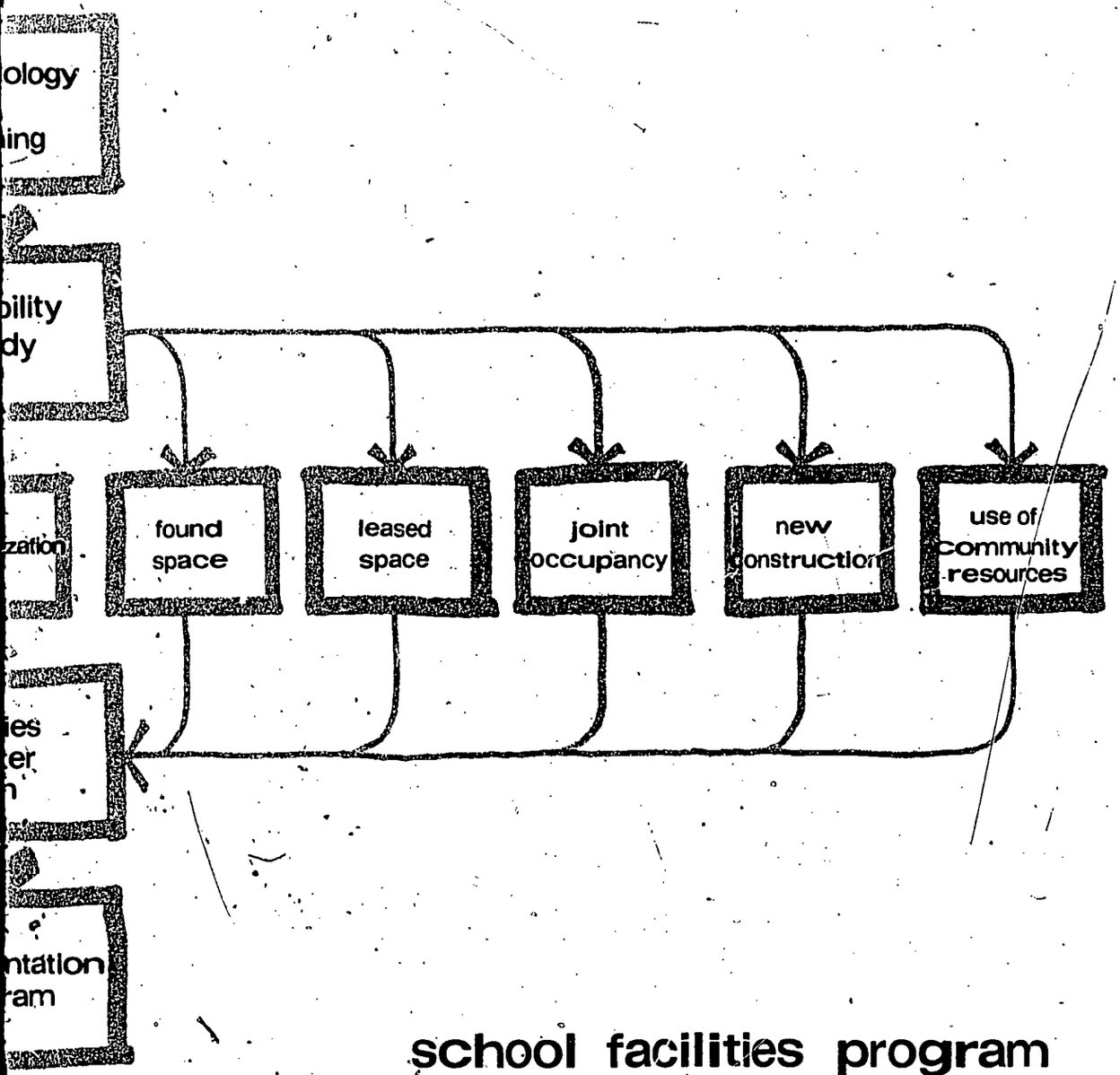


school facilities



school facilities program

Planning must bring together diverse elements of a particular situation within a framework that gives definite direction towards solving the problem.

The process varies in complexity; the more complex, the greater the need for team effort.

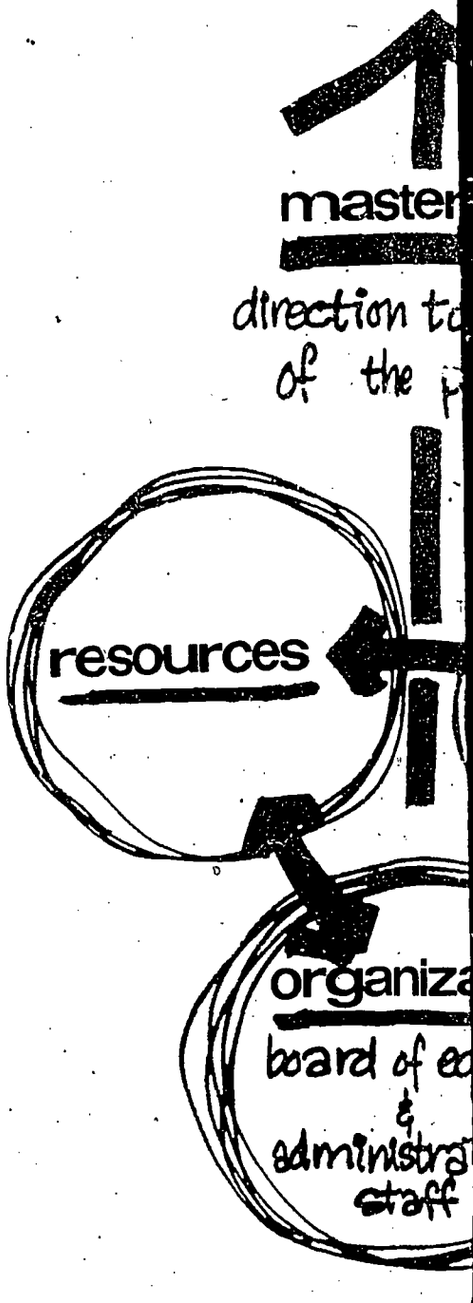
A fully implemented facilities master plan might derive input at various times and in varying doses from ...

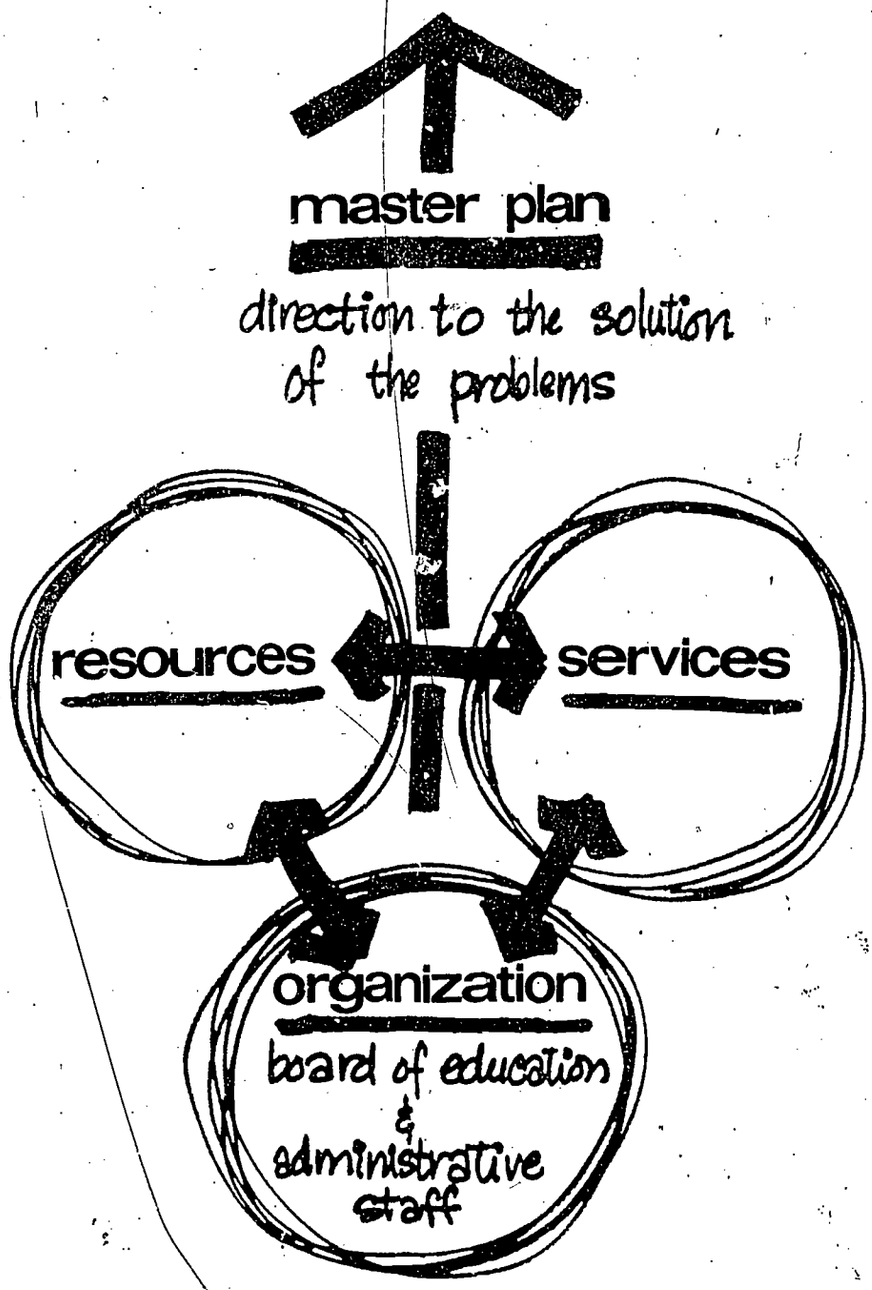
educators
architects
public officials
planners
parents
students
teachers
the community
engineers
economists
psychologists ...

and a lot of other 'ists'.

The responsibility for maintaining a vital master plan sits squarely on the shoulders of the Board of Education and the administrative staff. How this work is accomplished, however, varies with the resources and the background of the staff available to the Board and the complexity of the problems themselves.

Some school systems, generally the larger ones, have established planning departments with high degrees of professional competence. Consultant help is called on to solve specific problems, but the overall coordination of the program is under the aegis of the department. In some cases new positions, such as construction manager, have been specially created to coordinate the efforts of various agencies and individuals.




master plan
direction to the solution of the problems
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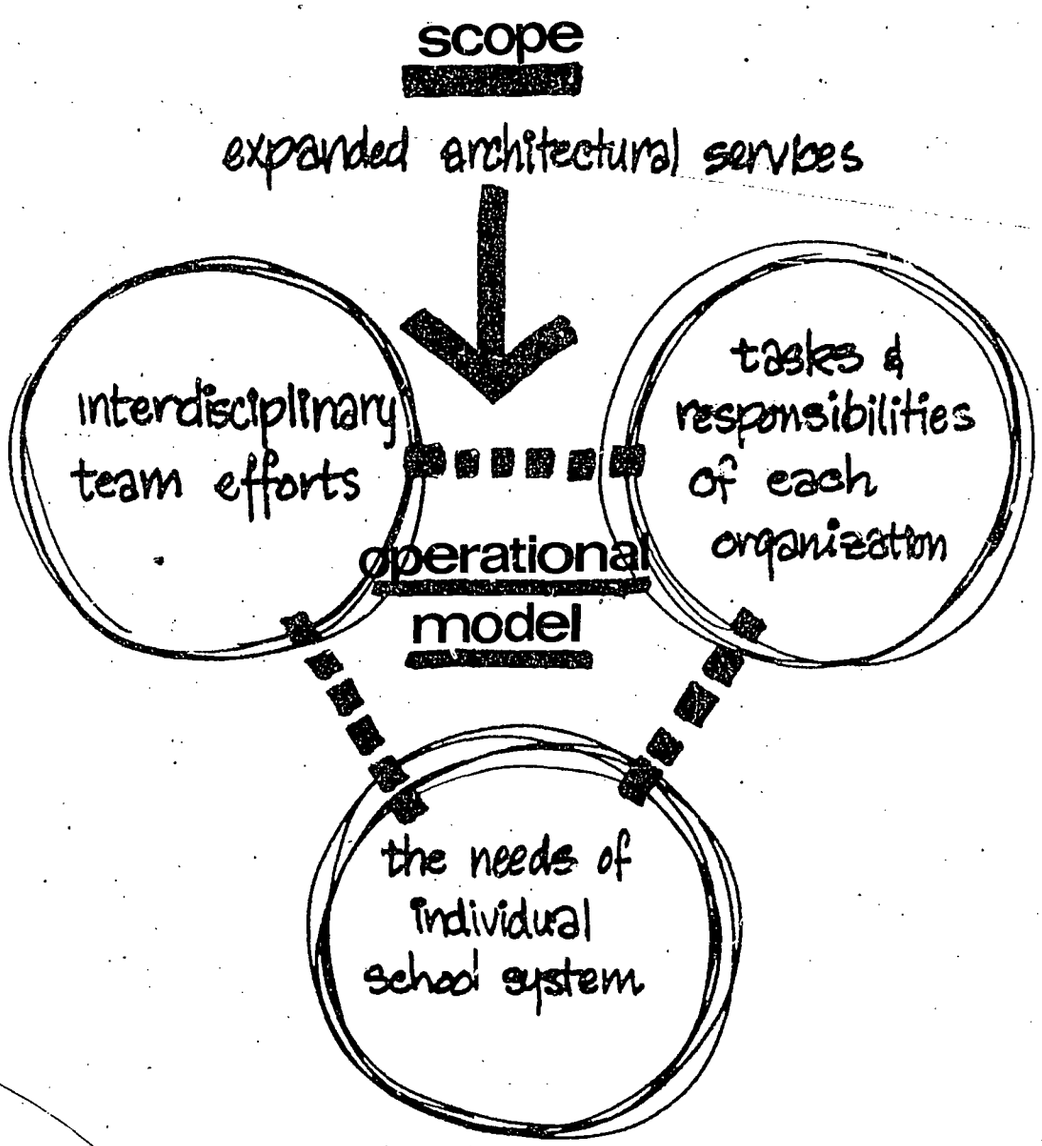
board of education & administrative staff
planning process



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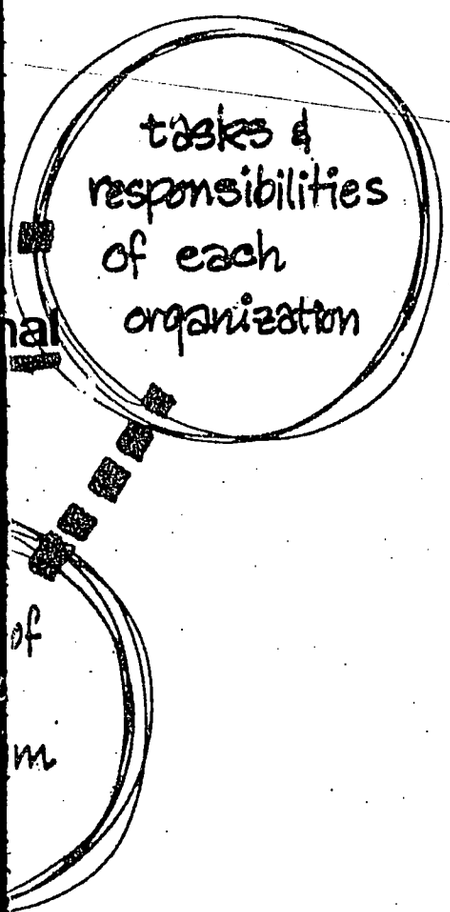
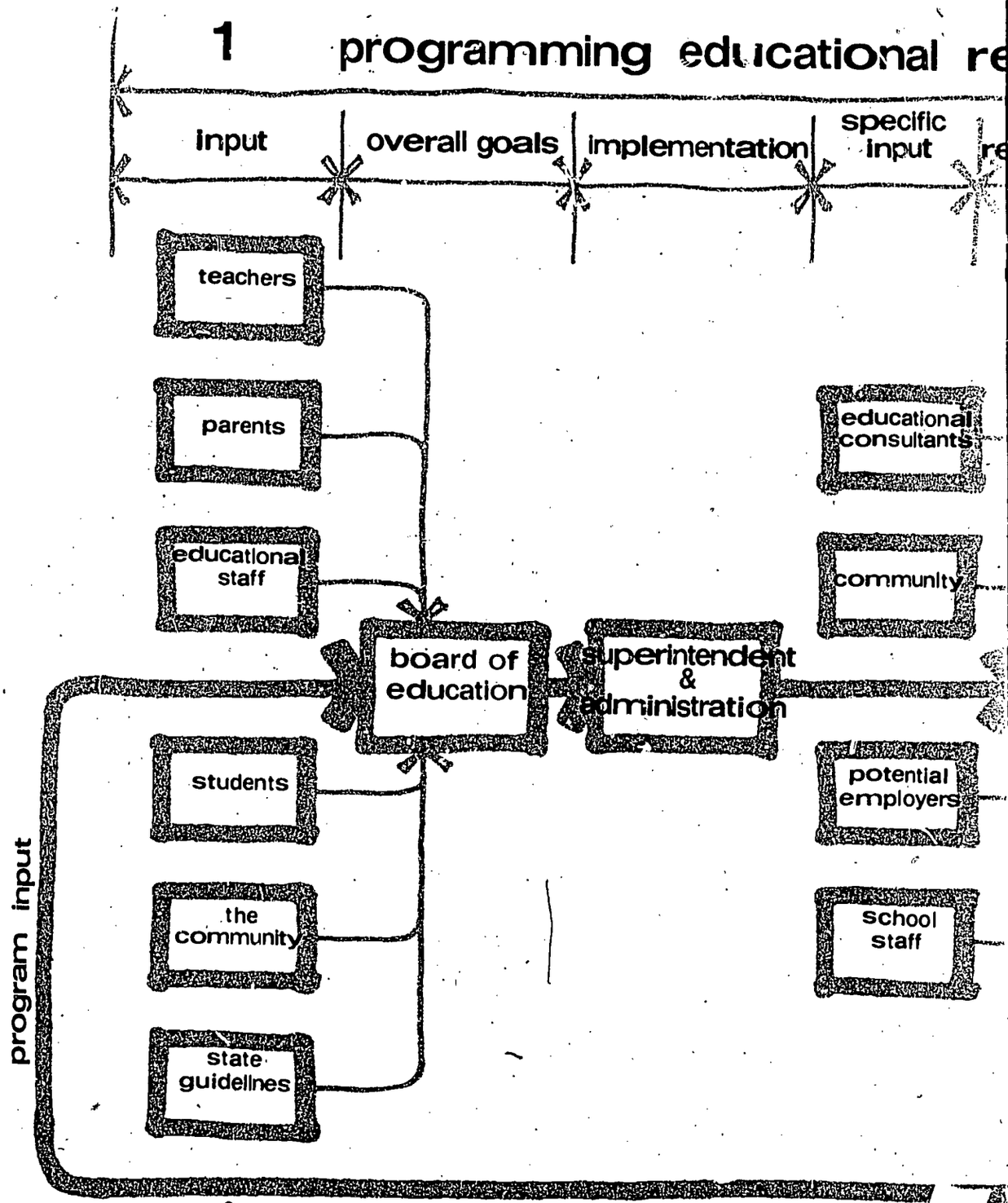


Increasingly, however, school districts are contracting overall planning, design and construction management services from qualified consultants. The architectural profession is moving steadily into solving environmental problems once considered beyond the scope of traditional architecture, through the interdisciplinary team approach of expanded services. Many school systems feel that at least the initial work of surveying, designing and formulating procedures can be performed better under contract than by straining their own organizational operations. We can expect this trend to grow as more boards and other official and corporate bodies become aware of the fuller ranges of services available to them.

No matter what methods are used, however, a basic operational model must be developed - one that defines the tasks to be accomplished and the responsibilities of each organization involved. Naturally the model will vary for each set of circumstances and must be tailored to the individual school system. The flow chart on the following pages is a hypothetical one that could be typical for medium to small districts that engage consulting firms to establish and manage a school facilities renewal program.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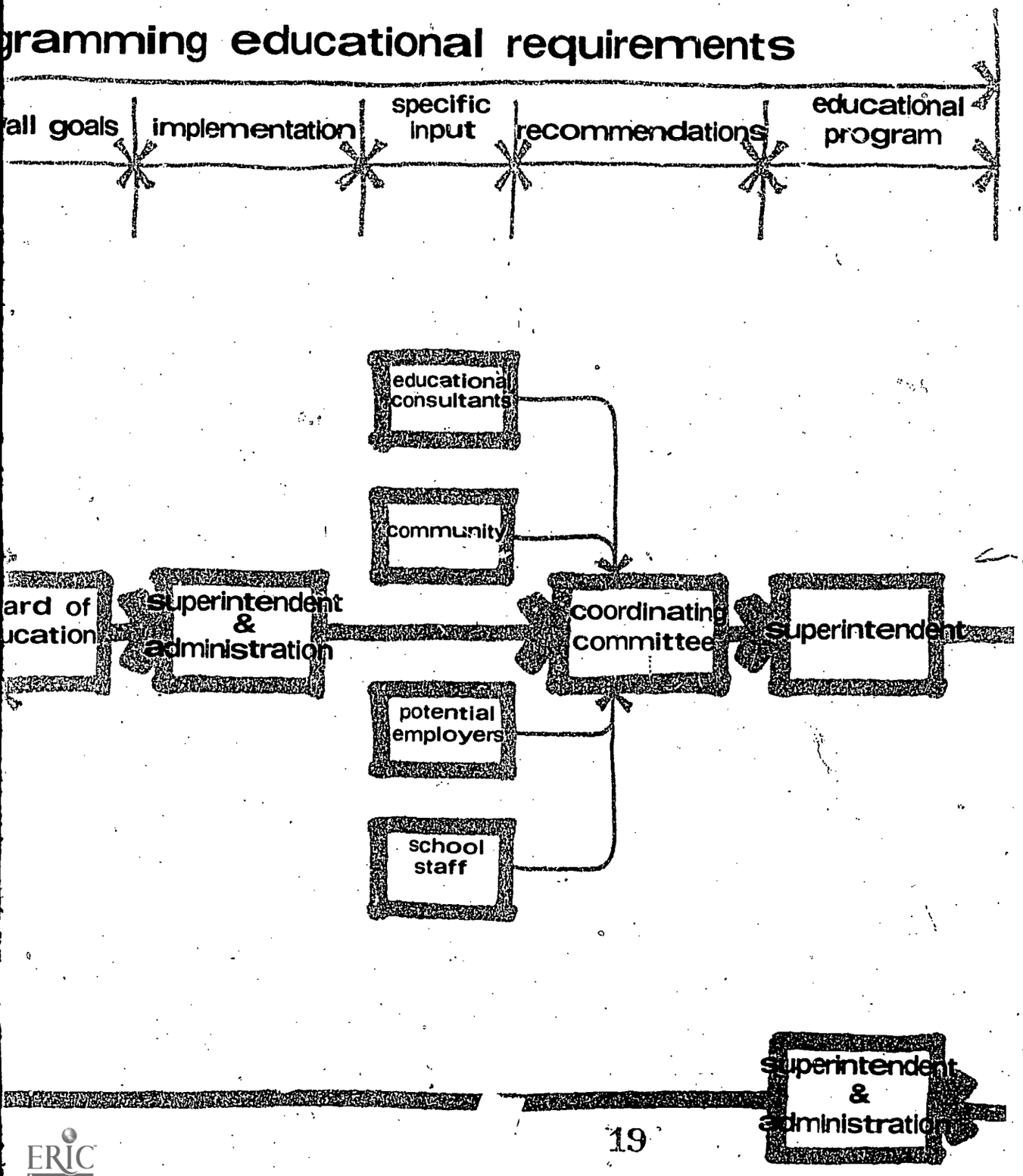
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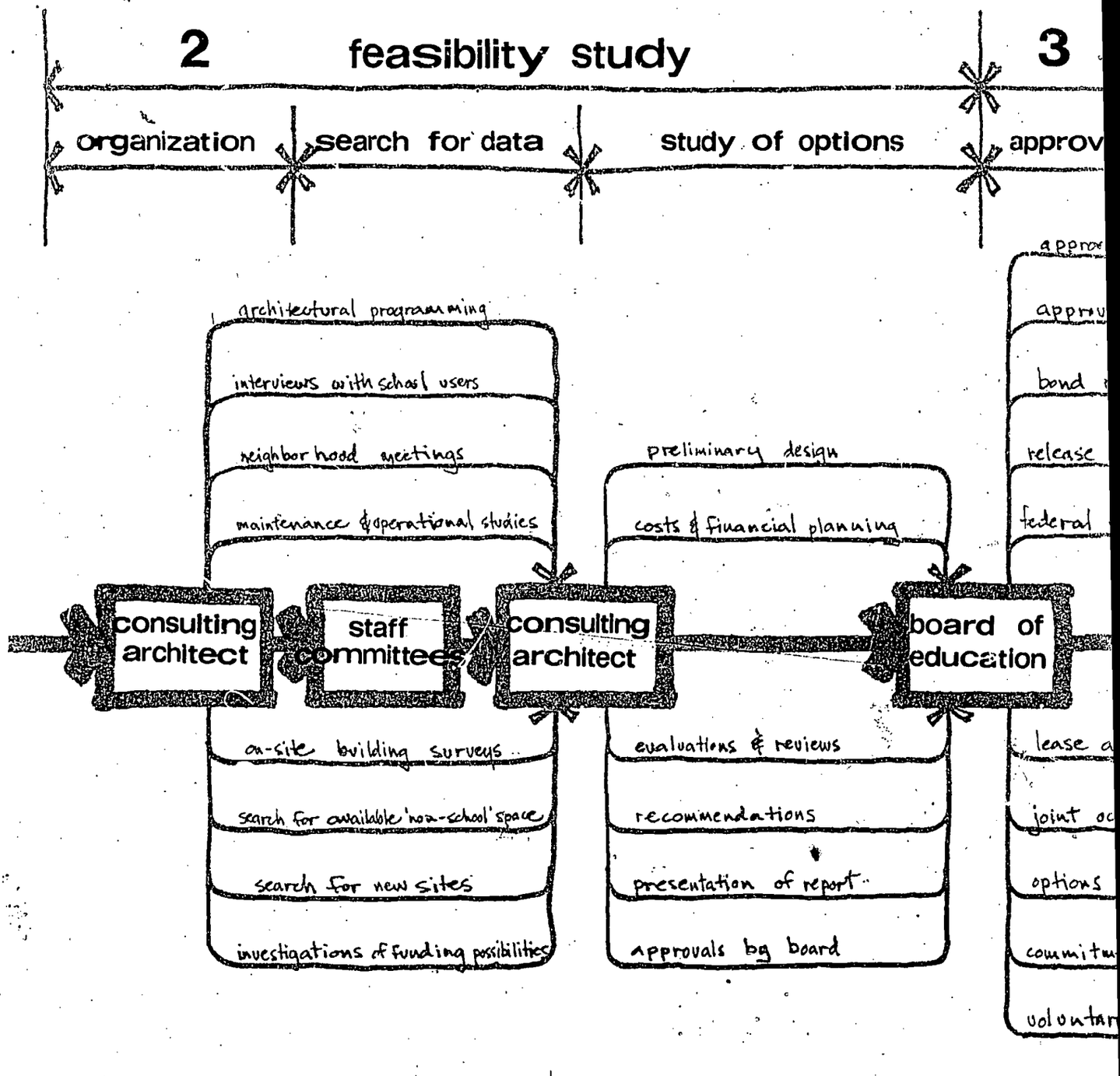
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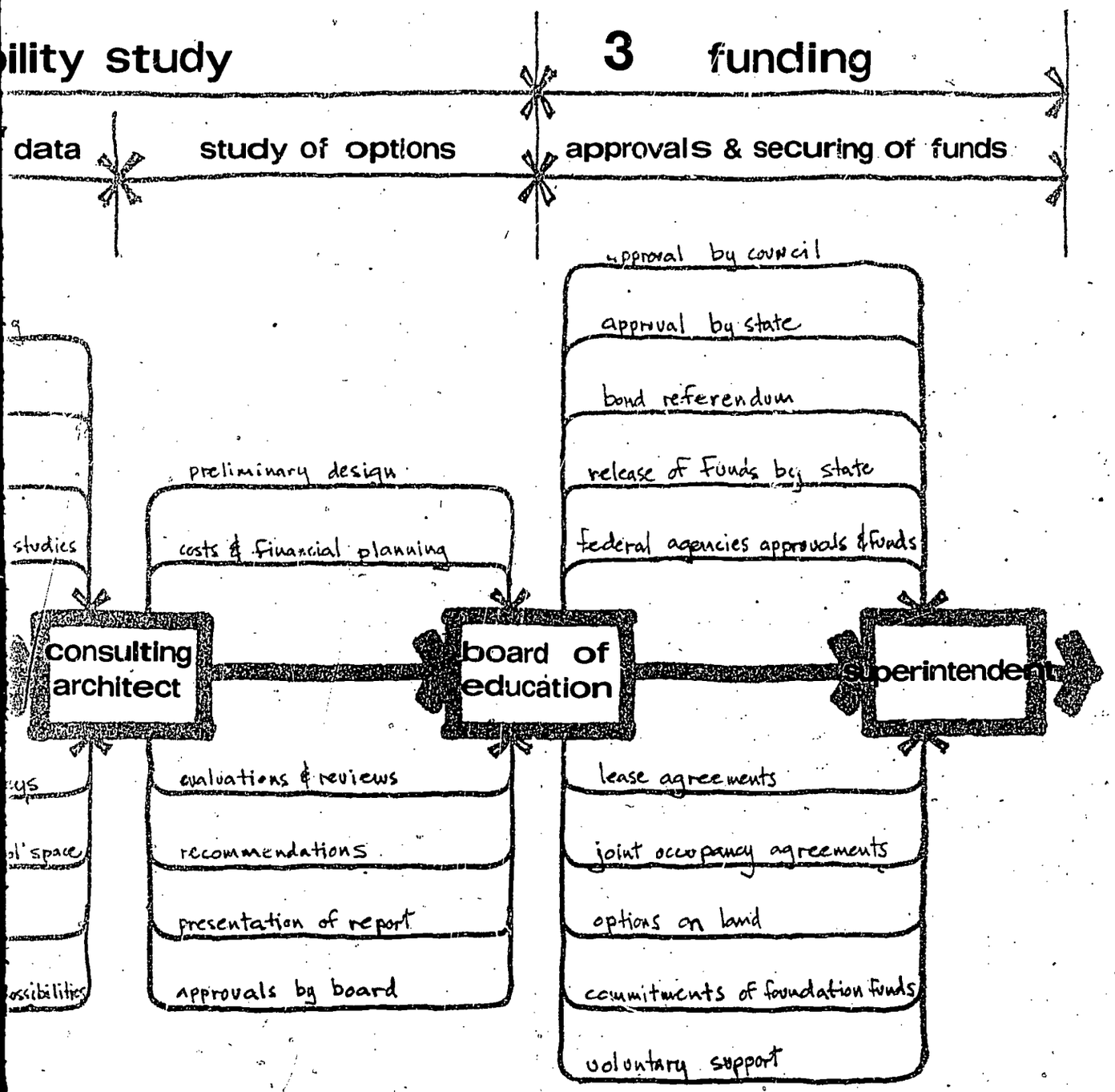
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joint occupancy agreements
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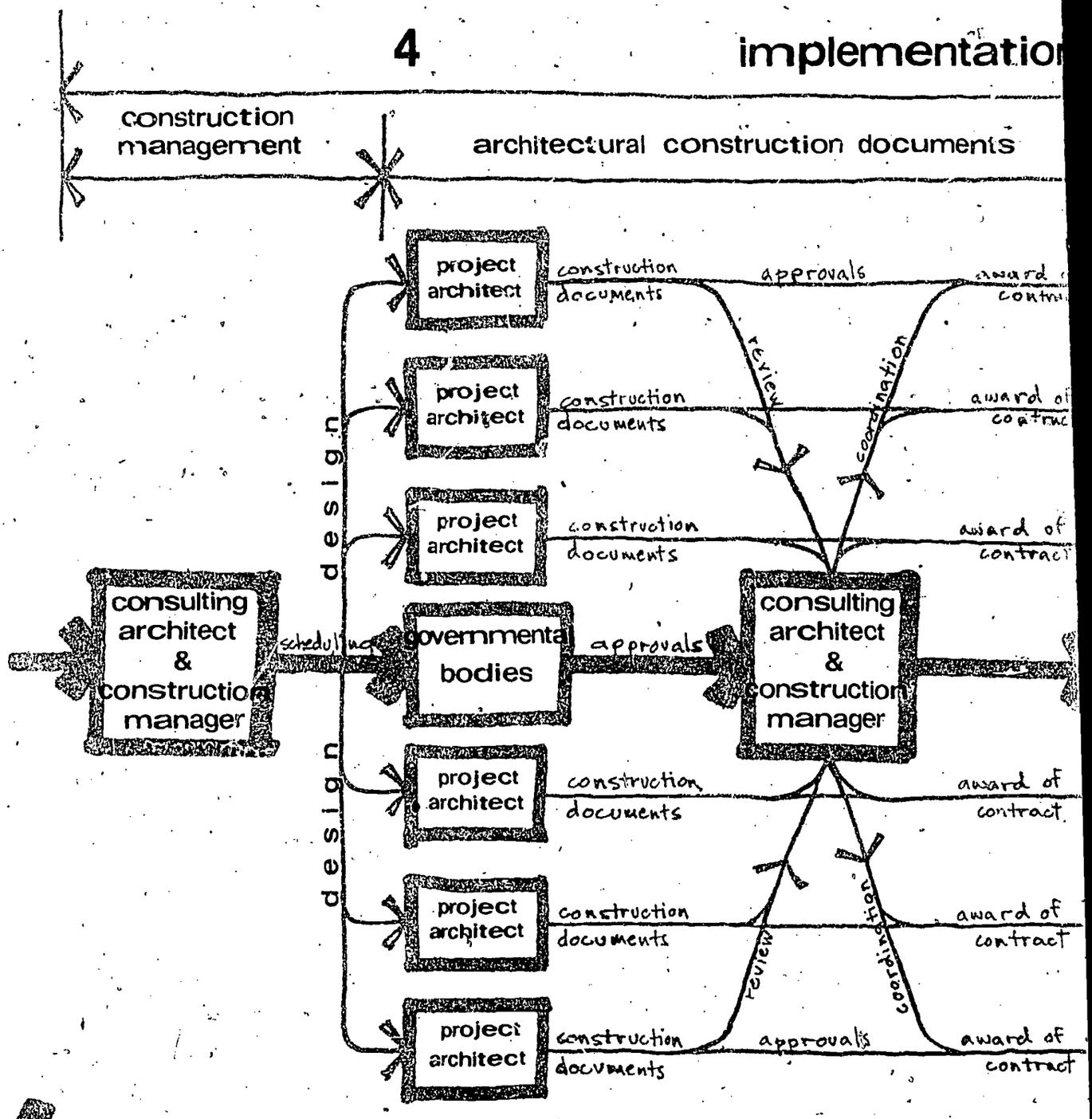
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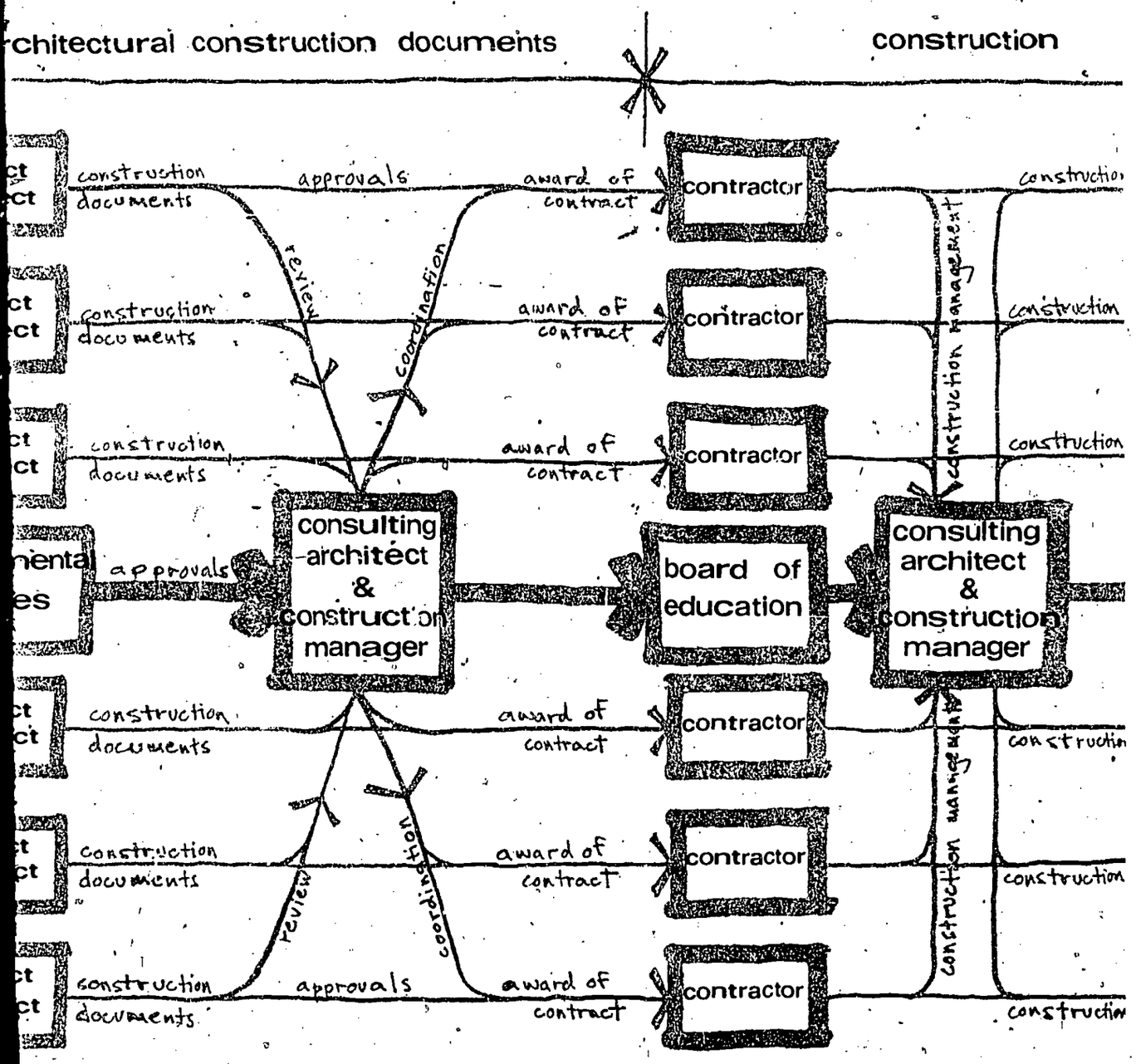

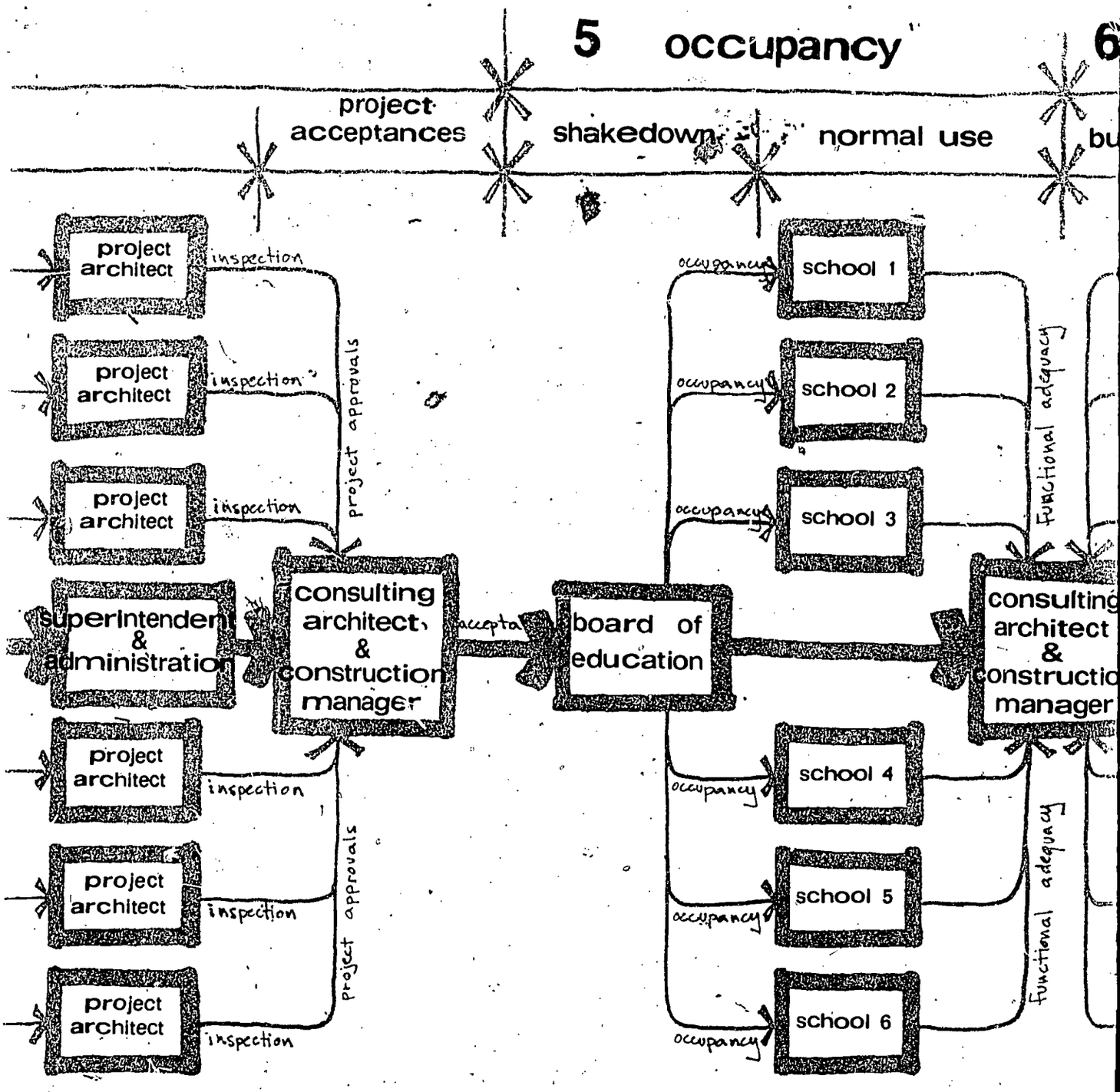
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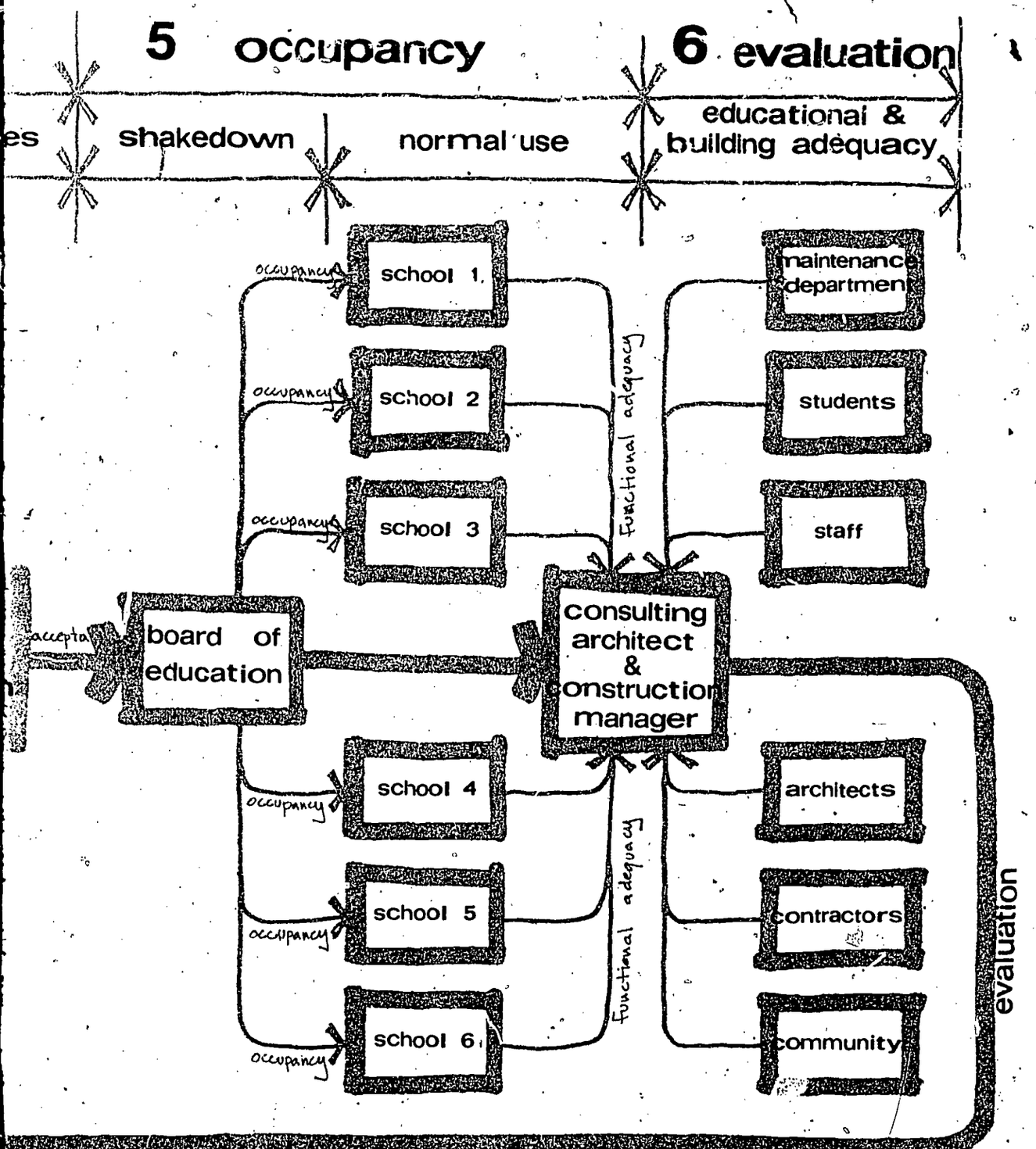
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programming educational requirements

The logical first step in master planning a school system is the establishment of educational goals. This precedes architectural programming, and expresses the community's "big picture" of education in relation to its own problems: Should the system be consolidated with others or the district organization changed? What are optimum school sizes and desirable grade or age distributions? Are there social or racial implications within existing attendance areas? What places do early childhood, career and special education occupy in the overall program: How far should individualized learning, team teaching and nongraded education be carried? How much use will be made of new methodologies?

The answers to these questions affect facilities planning, whether it be for new, remodeled, leased or found space. The educational program should not be tied to the obvious limitations of existing school buildings. Once the goals have been established, it becomes the architect's responsibility to use his ingenuity to create a satisfactory learning environment by the manipulation of space.

As mentioned before, the board of education, whose prerogative is to set policy, can no longer afford to do so in isolation. Too many outside pressures influence every significant question. Ways must be found to channel these diverse influences into a positive position. The U. S. Office of Education has championed a process known as Charrette, which brings representatives of the many segments of a community together with the decision-makers, in a concentrated series of work sessions. It is basically a method of citizen involvement and confrontation and can serve effectively in many situations. Other less volatile means can also be used: community committees, small group meetings, public presentations, educational consultants, or informational seminars.

However it is done, a procedure should be established to absorb input from many sources, conflicting or not, before overall goals or specific educational program requirements are settled.

feasibility study

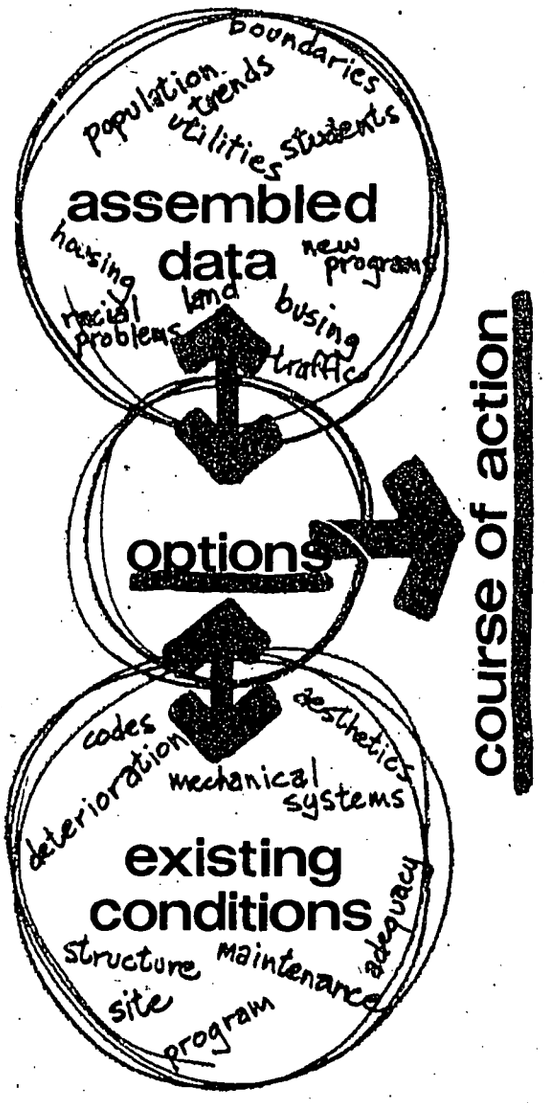
A facilities feasibility study for a school district involves a series of overlapping phases:

Assembling and analyzing data
Surveying existing conditions
Studying the options
Recommending a course of action

Much of the preparatory work can be gathered from files already in the district's central office. Data on school population trends, attendance boundaries, use of buses, housing patterns and racial mixes, location of traffic arteries, and many other types of demographic information need to be gathered and catalogued for future use. The district engineer can furnish information on street grades, utilities, topography and plans for future development, and the assessor can provide estimates on land values and give opinions on the availability of land. School personnel knowledgable in local matters are invaluable in looking for found space - nonschool facilities that might be converted to educational uses.

Maintenance records on schools or reports by school facilities advisory committees help immeasurably. In one school district, building needs committees consisting of the principal, teachers, staff, and citizens had been in operation at each school even before architectural consultants were retained. The pre-survey surveys made by these groups, though often not technical in nature, pinpointed the buildings' shortcomings and gave insight into the communities' levels of expectation.

More information is gathered as the study progresses. On-site reports from survey teams add to the data bank that will be used in developing options and recommending solutions.



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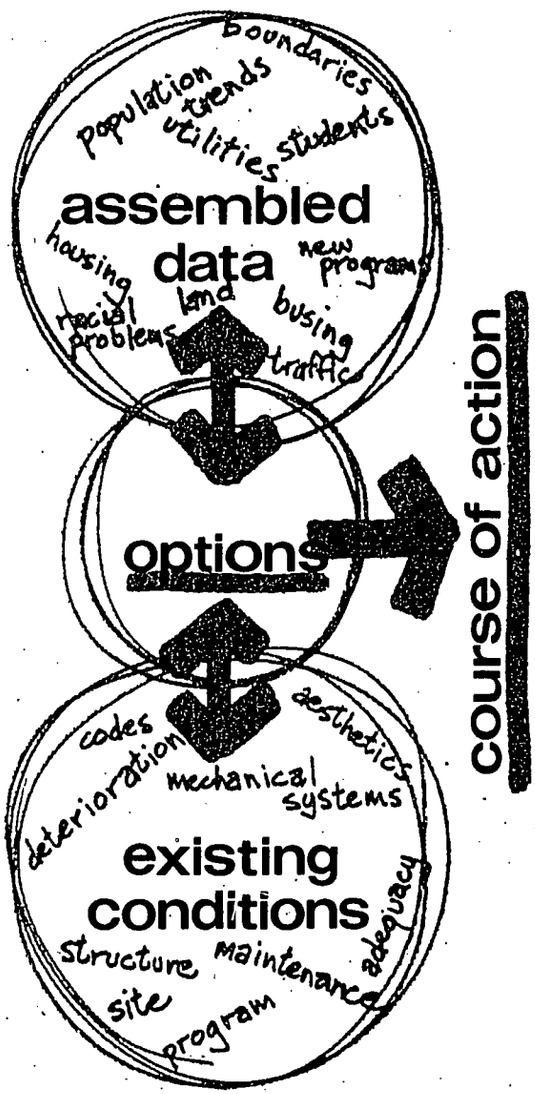

Care in recording and recognizing emerging patterns is important to the final result.

Physical plant surveys are critical to the modernization process, and require experienced professional evaluators. Such surveys are required to:

* Determine conformance with safety and building codes
* Look for signs of deterioration in the structure and in mechanical and electrical systems
* Check the accuracy of existing plans
* Evaluate the functional use of existing spaces and their adaptability
* Assess the environmental aesthetics of the building
* Study site usage and adequacy
* Learn of complaints first-hand by interviews with staff and custodians
* Collect data for future cost estimates
* Check neighborhood characteristics

Not all surveys need the same in-depth thoroughness. Often an experienced team can conclude, after a walk-through inspection, that too many building elements and systems would have to be replaced at far too great a cost for modernization to be feasible. Again, from a knowledge of the types of structural systems and materials common to various vintages of school buildings, and from examination of the plumbing and electrical installations and level of maintenance, a brief inspection by such a team can bring out approximate cost figures for general modernization.

In other words, a school district unsure about the feasibility of modernizing old buildings need not commit itself at the beginning to a full service study without some assurances that the renewal route is possible. Services can be phased, moving along as findings warrant.

An important by-product of a district wide school facilities survey is the accumulation of information for continuing programs of preventive maintenance and future modernization. Thus, formal surveys should be conducted systematically and the results uniformly recorded. School personnel should be able to use the same system in later years to revise and update the information and establish priorities for school renewal.

We have found that two inspectors working together are more effective than one. There is less chance of omission and error, and two can inspect and record more efficiently. Written reports are often transcribed from taped remarks.

Generally, a checklist record sheet for each project is very effective. This lists site size and adequacy, the building's age, type of construction, condition of equipment and systems, deficiencies in code and safety standards, and general overall impressions.

A room condition schedule gives detailed information on the condition of chalkboards, walls, floors, ceilings, heating units, etc. At the same time drawings are checked and noted for accuracy. These individual schedules combined with the room rehabilitation schedules (which are prepared later) are the most important sources of cost estimating information.

Another method used for evaluating existing buildings is the score card, which breaks down the elements of a school building: site, neighborhood relationship, exterior, interior structure, plumbing, electrical and mechanical systems, fire safety, educational spaces, and so forth. Each category is assigned a weighted point value corresponding to its judged importance to the whole facility. Added together the point values give an idea of the adequacy of the building.

Score cards have been in use for some time, and experiences with them have been both good and bad. The greatest difficulty has been in establishing the criteria for assigning and interpretating point values. In this day of educational experimentation there is no way to create a universally acceptable ideal situation against which to judge our buildings. What's considered essential in one school system is an anathema in another. Thus criteria must be created separately for each district, and judgments must be made as to the relative importance of such elements as individualized programs and the need for large auditoriums. Then this must be assigned relative numerical values. Without similar indoctrination, two evaluators might not agree. The rapidly changing world of learning should not be stifled by the constraints of this criteria which once established,

Example of the major categories and the point values used in evaluation with score cards.

Sample breakdown of scoring for Category IV - Educational Adequacy.

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Nevertheless, we are convinced that there is a definite place for mathematical evaluation once the inherent weaknesses are recognized. We envision that in the near future, school district personnel will be able to annually re-evaluate their school facilities on a score-card basis with the help of computers. At the same time, simplified cost data procedures also using computers will allow for budget estimates. A sufficiently sophisticated program that includes enrollment projections and other demographic data will enable school administrations to establish building priorities, estimate budget costs, manage preventive maintenance operations, plan for upgrading educational spaces and phase the replacement of obviously unusable structures.

Example of the major categories and the point values used in evaluation with score cards.

	OVERALL RATING CATEGORIES	Point Scores	Relative Percentages
I.	Site	100	10%
II.	Building Condition	150	15
III.	Building Services	250	25
IV.	Educational Adequacy	350	35
V.	Adequacy of Non-Instructional Areas	150	15
		1000	100%

Sample breakdown of scoring for Category IV - Educational Adequacy.

IV.	EDUCATIONAL ADEQUACY			350
	A. Instructional Areas		50	
	1. Utilization	10		
	2. Flexibility	15		
	3. Large Group Facilities	10		
	4. Storage	5		
	5. Project Areas	10		
	B. Resource Center		40	
	1. Audio/Visual Facilities	15		
	2. Reading Areas	10		
	3. Work Areas	10		
	4. Storage	5		
	C. Science Facilities		30	
	1. Earth Science Labs	10		
	2. Physical Science Labs	10		
	3. Preparation Areas	10		
	D. Business Education Facilities		20	
	E. Unified Arts Facilities		40	
	1. Home Arts	10		
	2. Arts & Crafts	10		
	3. Music	10		
	4. Industrial Arts	10		
	F. Special Education Facilities		20	
	G. Relative Location of Instructional Areas		20	
	H. Construction and Finishes		60	
	1. Floors	10		
	2. Walls	10		
	3. Ceiling	10		
	4. Chalkboards and Tackboards	10		
	5. Color Scheme	10		
	6. Doors	10		
	I. Natural Lighting		20	
	1. Windows	10		
	2. Sun Control	10		
	J. Equipment		50	
	1. Fixed	20		
	2. Movable	20		
	3. Special	10		

The search for solutions and carefully evaluated alternatives must begin when the initial stages of the feasibility study have been completed. There seldom is one clearcut position so obviously superior to any other that it defies comparison. Most design solutions are arrived at after carefully weighing the options, and some compromises are likely to be made. The fear that these schools cannot be suitably adapted to house modern programs is largely unfounded.

Shown on the following pages are examples of designs for remodeling individual schools. Most of them illustrate an opening up of instructional spaces - sometimes by removing many walls, sometimes by making small openings in existing walls to let two teachers work together, sometimes by providing spaces of varying sizes that allow greater flexibility for learning. Visits to new open plan schools confirm that it is rare for very large groups to assemble in instructional clusters.

The objectives are not necessarily to create wide open spaces everywhere, but rather to create fluidity - environments that can be rapidly and easily adapted for a variety of small or medium group activities. Knocking down walls between classrooms can help in creating this fluidity, but it need not be necessary to eliminate all self contained classrooms as long as they are considered but one variety of space within an overall flexible learning cluster.

Other drawings show how useful space can be recaptured from areas now underused or functions now obsolete. For example, many schools find the traditional large auditorium of small value now but it can be turned into a fine, centrally located learning resources center by levelling the floor and by carpeting. Similarly, existing cafeterias or too small libraries can serve as suitable kindergartens or open instructional clusters. Many old schools have boiler rooms and coal shutes that have been abandoned and generally used only for miscellaneous storage. Imaginative planning might recapture such spaces for music rooms or other special purposes.

What the plans cannot show, however, are the uses of materials and the architectural treatment of the spaces. Old buildings can be made wonderfully warm and exciting by good interior design. Contrasting carpets and other floor materials, changes in heights (possible with the old high ceilings), differing light fixtures and intensities often can be used to better advantage and with less sterility than is frequently seen in the manufactured look of many new buildings. Paint alone can help rejuvenate if the color selection is taken out of the maintenance department and put in the hands of a sympathetic designer.

Modernizing a school goes beyond just architectural revitalizing. It includes new furnishings also. Standard classroom furniture and equipment does not function well for the programs and spaces now being introduced. A common mistake has been to crowd too many traditional desks and chairs into the open areas. Manufacturers have been slow to recognize the new requirements, but now they are tooling up rapidly. Equipment need not be elaborate and some can be made by the children themselves. The primary requirement is flexibility - units that are modular and can be used interchangeably for sitting, working, storing and dividing. Some imaginative products, a few that can be recycled, are now on the market.

cost considerations

A look at the proposed plans should raise some questions. Within the range of options why were certain changes incorporated and other seemingly obvious ones not?

At one end of the spectrum is the possibility of completely gutting a building, removing all or most of its walls, replacing most of the plumbing, mechanical and electrical systems, adding complete air conditioning, re-roofing, replacing or reducing the fenestration, carpeting throughout, replacing chalkboards and tackboards, and providing bright new cosmetics. At the other extreme is a new coat of paint and the minimum work required to get by local codes. Cost estimates are naturally of great importance in deciding where the most feasible plan lies between these two extremes.

An important consideration in a complete program of rehabilitation must be consistency in standards. The program may have to be cut to meet financial reality, but it would seem better to lower the overall level of expectation rather than have some high spots and other dismal failures. A community as a whole is far more willing to accept a program that seems fair to all than one that singles out certain cases for special consideration. All schools need not be brought up to the same level of performance simultaneously, however. This is generally impossible anyway and does not take into account other practical factors such as predictable population shifts that may make one school unnecessary in five years or the deteriorating condition of another that will necessitate its replacement in the near future.

Space in older schools can be recycled to help regenerate education. School districts are responsible for applying high and generally equal environmental standards to all school facilities within financial limits.

The matter of cost looms as an omnipotent consideration, especially in multi-facility rehabilitation where inaccurate estimates are multiplied several times. The cost of renovation is the most difficult to estimate because even when old drawings and specifications exist it is never certain what will be unearthed when walls and ceilings are removed. The cost of doing work in older buildings is almost invariably more than comparable work in new buildings. This is particularly true where labor practices separate trades under multiple contracts. The always difficult problem of coordination becomes even more complicated when the unknowns in old buildings are involved. Do not, therefore, follow a path of wishful thinking. Figure on the high side at the start, build in greater contingencies than normal, estimate unit costs higher than new work, and don't forget that demolition and removal of old work can be a sizable expense.

In spite of these negative factors, even fairly extensive remodeling can be more economical than building anew. A typical breakdown of the costs of various building operations expressed as a percentage of the whole is shown in the box on the right.

About 40 percent of this total is in construction which remains stable with time: site preparation, excavation, foundations, floor and roof framing, structural columns and beams, and walls. These are the fixed building assets. The remaining 60 percent constitutes those items most subject to deterioration - plumbing, mechanical and electrical systems, roofing, sheet metal, ceilings, partitions, floor and roof finishes. The greater the care given the building over its lifetime, the less the need to replace these items; the less the need, the greater the opportunity to make changes that benefit education.

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A rule of thumb in determining the feasibility of modernizing a school versus replacing it states that if the cost of modernization exceeds 50 percent of the replacement cost, then modernization is questionable.

But more precise methods of cost comparisons can be applied that follow long-established principles of engineering economy. From a pure dollars and cents point of view, the practical question in replacing any machine or structure is not "How old is it?" but "What will it cost if it is continued in service, and what will it cost to replace?".

Rather than merely considering the initial costs of new or remodeled construction, a replacement economy study compares the equivalent annual costs over the prospective life of a new building against the annual costs connected with retaining and renovating an existing building over its expected economic life.

The point is one that many architects have been telling their clients for years. Initial construction cost is not the full story in the overall economy of a school building. Depreciation, operating and maintenance expenses, interest and efficiency of use are all potent factors effecting long term financial value.

The following hypothetical and simplified example is presented as illustration.

An outdated elementary school can be modernized to adequately meet its demands for the next 20 years at a cost of $600,000. The existing school has a present net market value, consisting primarily of its land value, of $200,000. After 20 years, at the end of its useful life, its net market value is also estimated at $200,000.

On the other hand a new replacement elementary school can be built on a new site for $1,500,000., including land purchase and all fees, etc. The useful life span of the new school is estimated to be 50 years, at which time its net salvageable value is also $200,000.

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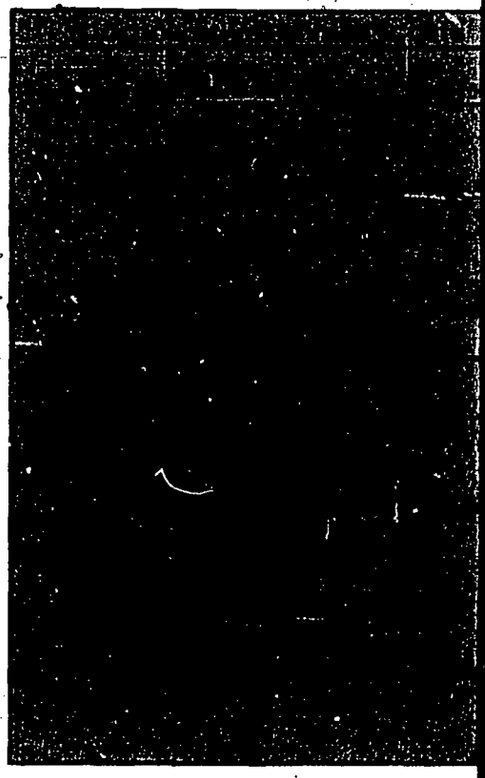

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The additional annual cost for maintenance, operations, interest and other administrative expenses for the old school over the new is $2000. Interest is assumed at 6 percent per annum.

In this instance, even with a useful life of only 40 percent that of a new school, the modernized school is the better financial investment by a substantial margin.

This type of comparative analysis seems particularly valid when a school system is making an overall appraisal of all its facilities, and such comparisons can be used to explain the long-range consequences of proposed actions.

funding

Unlike the last decade, which in retrospect was one in which at least adequate monies were available for educational construction, the 70's loom as a period of stringent restraints on capital outlay. The series of regional workshops on school facilities jointly sponsored by the American Institute of Architects, the U.S. Office of Education, the American Association of School Administrators, the Council of Educational Facilities Planners, and Educational Facilities Laboratories have as their theme "Finding Facilities Where Money is Tight". In educational and architectural circles it's a burning issue.

Faced with bond issue defeats, lack of significant federal construction programs and rising construction costs, school districts are finding themselves hard pressed to meet increasing demands for quality facilities. Many are falling behind their commitments.

Fortunately, adversity spurs improvisation. Administrators are finding new sources of revenue or new ways to reduce financial burdens by sharing uses and responsibilities. At the same time those of us in the construction industry are searching for ways to provide good space more economically. Modernization, of course, is one such example.

Educational Facilities Laboratories has produced "Guide to Alternatives for Financing School Buildings", a report that presents basic information on how certain school districts have financed construction, outside of conventional methods. These included pay-as-you-go financing, state aid, federal aid, reducing site costs, shared facilities, non-tax revenue, bond issues and leasing.

For the purpose of this study we will assume that the school administration has been successful in securing funds, by traditional or unconventional methods.

implementing the program

There is nothing unique about implementing a district-wide modernization program involving several schools, except that there is a greater need for careful management. Many more factors are involved. More children are attending classes whose normal schedule must be preserved as much as possible. More tasks must be performed, more contracts administered, more plans drawn, and more people involved. More functions, processes and schedules must be interlocked into a cohesive whole. But along with the added complexities there is an opportunity to challenge traditional methods of getting construction work built by developing an operational framework that strengthens the project delivery process.

No one method of organization is best in all circumstances. At times legal or political restrictions or labor practices prohibit operations that might otherwise be effective. The opportunities for innovative organization must be realized and used.

In the design process we have mentioned before the importance of input from many sources. In our hypothetical flow chart we have shown the design phase being accomplished by the consulting architects with a larger share of design development being worked by ~~other~~ project architects. This seems logical, since it is important to maintain consistent standards and to coordinate overall program requirements with the recommendations of the feasibility study. In this arrangement, however, the project architects must be given some leeway to make adjustments as physical or cost considerations warrant.

The practice of architects associating on particular projects is a widespread and long-standing one, and can be mutually satisfying. To be successful, a spirit of cooperation is necessary; shotgun mergers should be avoided at all costs. If a management team approach is used, consideration should be given to include a competent local contractor. His knowledge of the local construction market, the availability of labor, cost, schedules, and techniques can make a valuable contribution to the program. He should be hired on a strictly professional basis, as are the other members of the team.

Even more so than in conventional construction, modernization has always been treated as a customized building process. Frequently building equipment has been specially sized and fitted to existing spaces and ducts, pipes and conduits carefully threaded through a maze of structural elements. This is one of the causes of high unit costs. Because of the growing importance of school renewal in the construction market, however, manufacturers and architects are taking a more critical look at present practices.

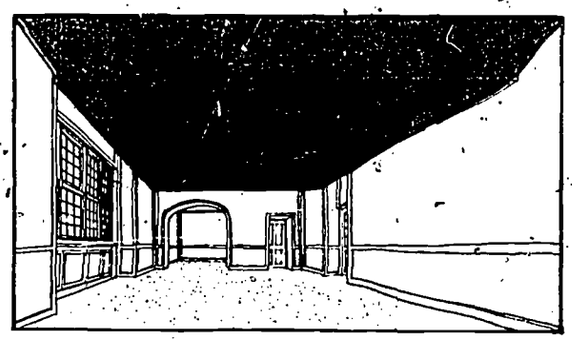
A review of vintage school buildings reveals a predictable similarity in their construction and appearance depending upon the era in which they were built.

Those built before 1900 are liable to have wood framing and floors, exterior masonry walls and inadequate fire ratings and safety exits. Often the spaces themselves are appealing - with airy classrooms and extra wide corridors - but generally have inadequate heating and ventilation. Such structures should be given careful scrutiny before they are retained. They can be turned into exciting schools, but adaptation can be an expensive process if many structural changes are contemplated or if routine maintenance has been neglected.

Schools built in the first decades of this century are likely to have cast iron interior columns and exterior masonry bearing walls. They may also have built-up steel beams and girders and flat tile floor arches. Surprisingly, their interior columns make these vintage schools more amenable to internal space rearrangements, but they still suffer from lack of adequate fire and safety protection.

School's built between the two World Wars are typically constructed of rolled steel structural members, masonry bearing walls, concrete floors, and sometimes all concrete framing. Ceiling heights in these buildings are still higher than they are today and the mechanical system is probably a steam boiler with cast iron radiation. In spite of interior bearing walls, which limit some space changes, buildings in this age group quite feasibly can be remodeled.

More emphasis is being placed on developing a systems approach to remodeling, by



New ceiling contains heating and cooling units, and electrical and communication systems.

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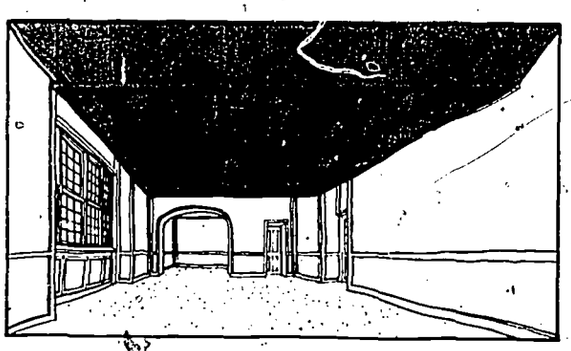
More emphasis is being placed on developing a systems approach to remodeling, by attempting to introduce standard building components into remodeled interior spaces, since many of these spaces follow set patterns. For instance, unified ceiling, lighting, heating and cooling distribution outlets, and other electrical, intercommunication and audio-visual systems, might be incorporated into a standardized classroom-sized unit. Mechanical units serving such a module could be incorporated in the space between the high old ceilings and the new suspension levels. Cabinet units, chalkboards, wardrobes, and many other traditionally built-in necessities can be provided in packaged form. Plumbing fixtures and rough-ins are always a problem in rehabilitation and efforts are being made to incorporate these in factory finished elements. The production and jurisdictional difficulties of systems building is well known, more so probably than the many examples of substantial success. In the field of modernization, the impact of a systems approach has not been dramatic so far, but it's only a recent development.



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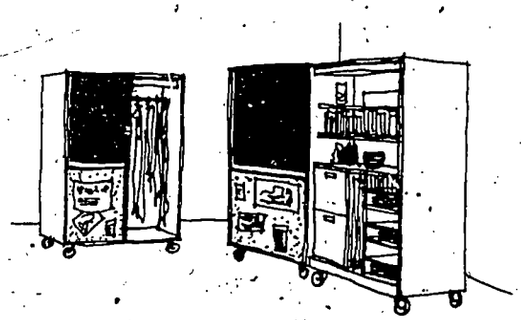


Movable compatible storage units replace traditional wardrobes, chalkboards and cabinets.

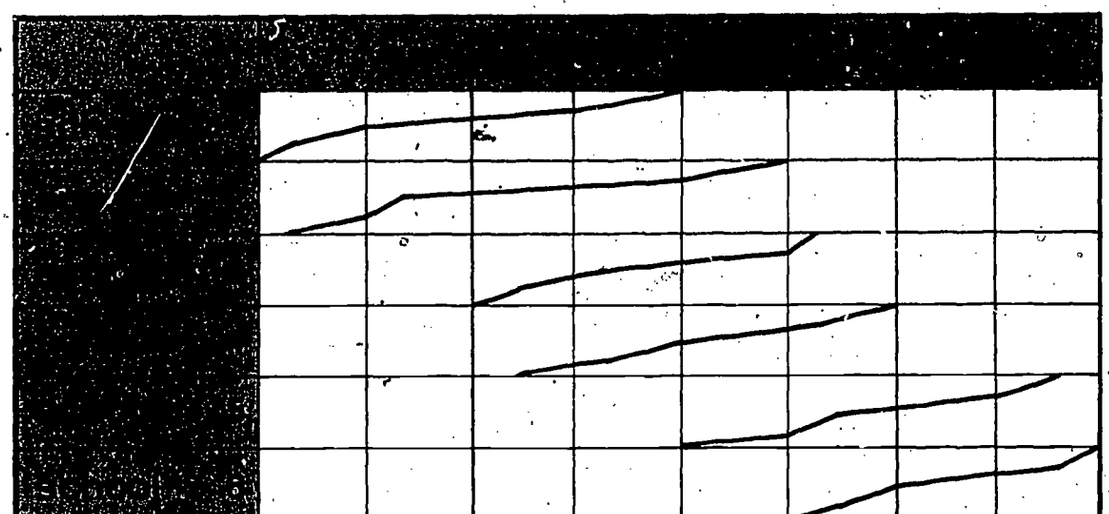
construction scheduling

Construction scheduling can be a major factor in a concentrated modernization program. In addition to normal building operations, it involves the movement or scheduling of large numbers of children. Construction in evacuated buildings is more economical from the point of view of efficiency, liability and damage insurance; it is not always possible.

Depending on the type of reconstruction, full remodeling can take place during the summer in part of a building - the auditorium for example - and partial evacuation of a wing can be phased throughout the school year. Renovation could involve vertical construction, which allows mechanical and electrical risers to be installed with the greatest efficiency, or horizontal construction, which is more logical from the point of view of educational use of space.

Whatever the schedule, it is almost inevitable that some adjustment will have to be made in the routines of the children, either within the school itself or between other schools. It may involve moving to other schools for a short time, or not using the new materials center as such until all building work is complete, using it in the meantime as a surge space for instruction.

In some circumstances, it might be desirable to separate the work into component units, such as demolition, building construction, and mechanical and electrical work, and schedule specialist teams to move from one school to another in a continuing operation. In other places, the mix and size and experience of available contractors may make it necessary to let single contracts for each school project. This then raises the question of using different equipment in each building, and in fact questions the whole matter of performance specifications. Either way, however, the scheduling of construction manpower and resources remains critical.



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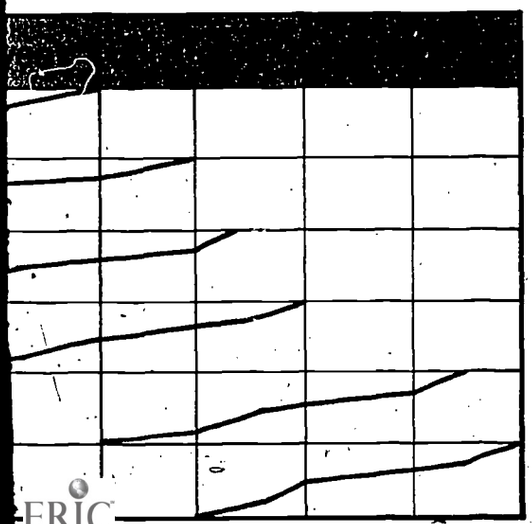

occupancy and evaluation

Except possibly for industrial operations, continual evaluation of a building after it has once been occupied is new to architecture. It is one of the weaknesses in environmental planning. If we believe that within a building's lifetime its uses and functions and lifestyle change and grow with its occupants, then it would appear logical to accommodate these changes within a framework of consistent concern.

This involves more than just a program of preventive maintenance that deals only with physical things. It is more like preventive medicine that deals with both the physical and the emotional.

For an architect to have nothing more to do with a school after it has been accepted is detrimental not only to the profession but also to the well being and enjoyment of the family of users. Some school systems now include a clause in their architectural contracts that requires an evaluation report after a year of operations, but this again misses the real recurring role of involvement.

Evaluation serves as a source of input for new or continuing programs. As in other phases of the renewal process it takes sympathetic team effort: The users learn the strengths and drawbacks of the facility, the designers suggest changes, encourage new uses and make modifications in keeping with the precepts and capabilities of the building itself.

We will find more of this in the years ahead as we begin to get away from the tradition that providing facilities for learning is a linear process involving a series of isolated actions following prescribed order. Environmental creativity is not an exact science and it is not present only in a certain type or group of persons. Fostering creativity means channeling contributions from many sources into a vortex of enlightened decisions based on evaluation, not absolutes.

west hartford connecticut

a study of
the town's
twenty-two
school buildings
to determine
how they could
be revitalized
to house
expanding
educational
programs

ERIC

background

The town of West Hartford, Connecticut, population 78,000, is typical of a well-established, economically stable suburban New England community. It has always been deeply interested in educational and cultural matters, and its genuine concern now is a reflection of an intelligent, sophisticated citizenry.

A study commisioned by the Board of Education and concluded in 1968 by Engelhardt, Engelhardt & Leggett, educational consultants, took a hard look at the Board's educational goals for the next 15 years, and projected facilities requirements to meet them. The study suggested the construction of new schools, additions to and remodeling of some existing school buildings, and abandonment of many older structures. Its price tag in 1968 was $23 million plus.

The report formed the focal point for an intensive reevaluation within the school system itself, which included staff, faculty, students, and the community. General precepts were establishe for the future direction of education in the town's life. These included:

1. Individualization of instruction, incorporating to varying degrees nongraded programs, team teaching and media instruction.
2. Revisions in grade organization from a K-6, 7-9, 10-12 system to PreK-5, 6-8, 9-12.
3. Facilities for early childhood educat if not immediately at least in the near future.
4. Greater emphasis on job-oriented programs.
5. Increased use of community resources for educational purposes.
6. Facilities programs responsive to current educational requirements and adaptable to changing requirements.

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By 1970, the Board of Education, faced with skyrocketing construction costs and revised requirements, determined that it needed to look at alternative facilities solutions. It recognized its first responsibility in providing quality education in the best possible environment at the best possible price. The Board also realized that the educational dislocation that children would face if several useful buildings were abandoned, had to be minimized.

Recognizing that to undertake such an investigation would require programming, planning and technical assistance, the Board retained the firm of McLeod, Ferrara and Ensign, architects, as consultants.

The consultants' task quite simply was to determine whether or not it was possible to bring the town's educational facilities up to an educational and architectural standard that would meet the challenges of the future within an acceptable budget.

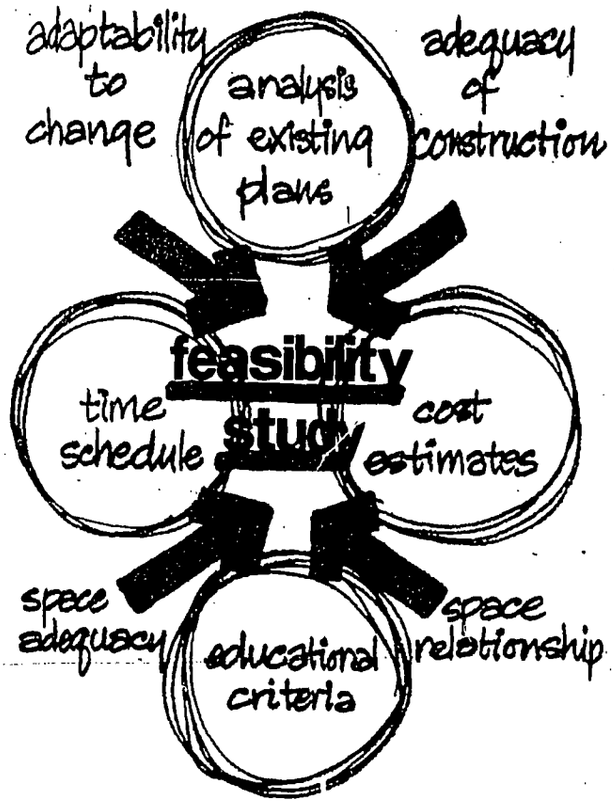
Educational Facilities Laboratories, believing that the results of such a town-wide study might serve as an example to other communities with similar problems, provided a research grant for this project.

feasibility study - guidelines & parameters

A feasibility study is not intended to be - nor should it be considered as - the only definitive solution to particular educational or architectural problems.

But it should be specific enough within established broad parameters to allow those who must make the ultimate decisions to do so with reasonable confidence in its validity.

The architectural consultants perceived their task as:



1. To survey all 22 of West Hartford's schools in sufficient detail to determine their adequacy of construction and their adaptability to change. These examinations were made through architectural and engineering drawings, visual inspection of each building, and interviews with maintenance personnel. No specific engineering tests were conducted on the structural or mechanical systems.
2. To program and plan educational spaces schematically for the emerging trends in West Hartford's schools. Existing inadequacies were discovered from the Engelhardt report, conversations with school system personnel, and review of the original plans. Programmed educational spaces required for the new curricula were arrived at by applying general principles of per pupil space requirements for the various subject disciplines. No detailed program evaluation was made for the needs and priorities of individual schools in specific neighborhoods.

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A feasibility study is not intended to be - nor should it be considered as - the only definitive solution to particular educational or architectural problems.

But it should be specific enough within established broad parameters to allow those who must make the ultimate decisions to do so with reasonable confidence in its validity.

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3. To project preliminary cost estimates for the recommended program. Again, estimates had to be made by applying applicable square foot costs rather than by a detailed analysis of each individual school construction proposal.
4. To propose a time schedule for implementing the suggested program. The method indicates the basic approach to scheduling construction. Other variations are possible and the final decision should be made only after a careful further look at the community's priorities.

adequacy of construction

y cost stimates

space relationship

Should the recommendations contained in this study - or later modifications - be funded and initiated, it is hoped that the project architect, or group of architects, will use this feasibility study's solutions as guidelines in developing more definitive designs for the individual projects. At that time many more people should be involved in the programming and planning processes - administrative staff, faculty, parents, students and the community at large. They will all have meaningful contributions to make in enriching the educational environment.

general deficiencies in existing schools

While most of the school buildings in West Hartford are well designed and maintained, they, nevertheless, reflect the educational climate at the time they were built. Thus, most are deficient or lacking altogether in spaces considered essential for present-day programs. Even many of the newer schools have inadequate facilities - an indicator of the dramatic changes that have taken place in education in just the past decade.

Listed below are those major areas which are generally deficient to some degree throughout the school system:

1. Library-Resources Centers
2. Spaces for instructional media
3. Professional facilities for faculty including workrooms, team planning areas, offices, clerical spaces and professional development libraries
4. Guidance and pupil services
5. Art studios
6. Music rooms
7. Science facilities
8. Individual study spaces
9. Spaces for large group instruction
10. Faculty dining and conference areas
11. Storage spaces
12. Sites and physical education facilities

Ages and Capacities of the Wes

SCHOOL	DATE OF CONSTRUCTION
ELEMENTARY SCHOOLS	
Mary Louise Aiken	1964
Beach Park	1921
Braeburn	1956
Bridlepath	1959
Lloyd H. Bugbee	1950
Charter Oak	1929
Louise Duffy	1952
Elmwood	1928
King Philip	1955
Morley	1927
Eric G. Norfeldt	1958
Florence E. Smith	1915
Webster Hill	1949
Whiting Lane	1954
Whitman	1910
Henry A. Wolcott	1957
JUNIOR HIGH SCHOOLS	
King Philip	1955
Alfred Plant	1922
William Thompson Sedgwick	1931
James Talcott	1922
SENIOR HIGH SCHOOLS	
Frederick U. Conard	1957
New Hall	1970

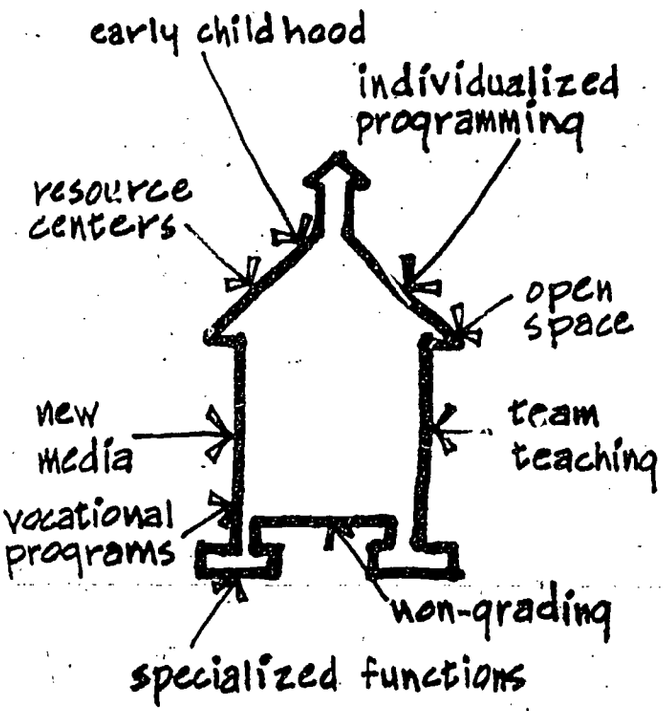
* Based on information contained in the Engelha

Ages and Capacities of the West Hartford Schools*

SCHOOL	DATE OF CONSTRUCTION	DATES OF ADDITION	NORMAL CAPACITY
ELEMENTARY SCHOOLS			
Mary Louise Aiken	1964	----	356
Beach Park	1921	1931, 1950	150
Braeburn	1956	----	348
Bridlepath	1959	----	326
Lloyd H. Bugbee	1950	----	370
Charter Oak	1929	1953, 1959	334
Louise Duffy	1952	----	608
Elmwood	1928	1951, 1959	374
King Philip	1955	----	458
Morley	1927	1952	388
Eric G. Norfeldt	1958	----	520
Florence E. Smith	1915	1925, 1953	304
Webster Hill	1949	1953	474
Whiting Lane	1954	----	410
Whitman	1910	1956	304
Henry A. Wolcott	1957	----	476
JUNIOR HIGH SCHOOLS			
King Philip	1955	----	800
Alfred Plant	1922	1929, 1954	678
William Thompson Sedgwick	1931	1957	755
James Talcott	1922	1940, 1950	649
SENIOR HIGH SCHOOLS			
Frederick U. Conard	1957	----	1733
New Hall	1970	----	1600

* Based on information contained in the Engelhardt Report

changing educational goals



Recent changes in education have come about not so much from any real change in objectives but rather by dramatic changes in methodology. Our forefathers had the same American dream: the best possible education for each individual child. The often-expressed ideal ratio of one teacher to one child has seldom been realized, and in fact probably never should be. The many facets of education are too diverse to be encompassed within the capabilities of any single individual. The recent patterns for individualizing learning, therefore, stress the ideal of one child - one program. Simple though this concept may seem, it has profound effects on school design.

Traditional school organization in which one teacher was responsible for a given number of children - generally 25 to 30 - within a fixed time frame gave rise to the common shape of our school buildings: a rectangle enclosing a series of smaller, equally sized rectangles called classrooms. This is now sometimes called the egg crate design, the rigidity of which seriously hampers attempts to introduce more flexible programming.

Planning programs for individual students requires the cooperative efforts of many teachers, guidance counselors and other specialists. Thus, spaces for team planning are necessary. The potential of instructional media are being understood more realistically and special spaces are needed for maximum use of these important new teaching tools.

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Education, then, is undergoing innovative changes in school organization, communications technology and curricula. It is becoming an ongoing process, beginning earlier and continuing throughout life. Team teaching, nongrading, programmed learning, independent study, teachers' aides, better evaluation techniques all have a place in the methodology of learning.

The overwhelming problem facing communities across the nation is how to provide the environment that meets these educational goals. It is one thing to start from scratch and build innovative places of learning, but the investment involved in existing facilities argues against abandoning them willy-nilly.

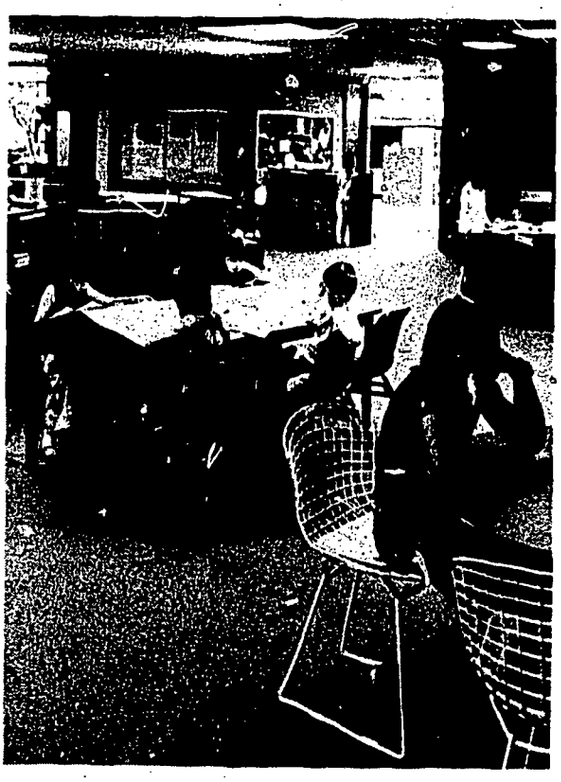
The examples in this study illustrate various solutions to reorganizing space in different types of existing school buildings.

individualized learning

The concept of individualized learning does not mean that each student always works alone. Nor does it mean that each student does as he pleases each day. It does mean that a structured program will be tailored to the needs of each student as he advances through a series of accomplishments. To do this, he may sometimes pursue his studies independently. At other times he might work in groups as small as two, or ten, or the traditional twenty-five children. On occasion the group might be as large as a hundred or a hundred and fifty.

In the individualized learning program, the role of the teacher also changes. Each student is guided by a team of teachers, each with diverse talents and experiences, that manage the individual programs for a group of students. Counseling and motivational support activities necessarily increase. The team investigates and develops instructional materials and searches out and organizes learning experiences in the community and elsewhere. The teams consist not only of teachers but paraprofessionals and other specialists as well.

Class scheduling is different also. Units of curriculum are broken down into smaller packages. Modular scheduling of perhaps fifteen minute segments or mods allows students to spend more time on one subject and less on another. Individual students have differing strengths and weaknesses; a flexible scheduling system recognizes these.



The times that schools are used vary in an individualized program. This is especially true at the secondary level where, increasingly, year-round and full day schools are appearing. This does not mean necessarily that students will spend longer hours in the schoolhouse but rather that flexible scheduling and staggered attendance hours will increase the efficiency of school plants and provide an even flow of people and services in the process.

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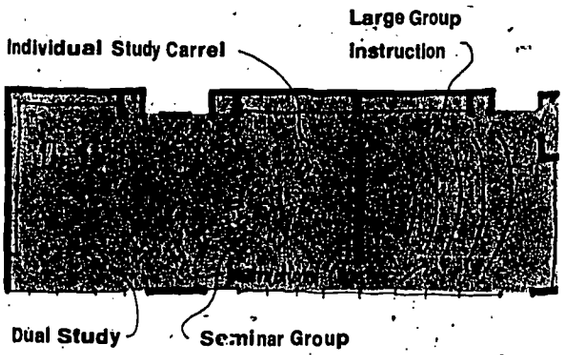
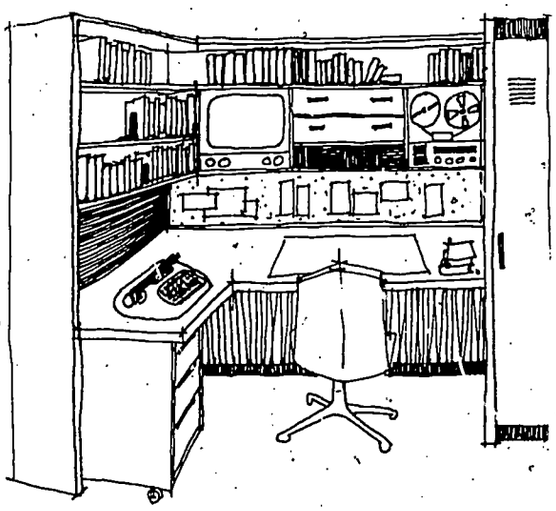
The concept of one child: one program does not mean that each child is studying independently at all times. He may at times be working in groups of two, ten, fifty or even one hundred and fifty. An instructional cluster from AIKEN Elementary School illustrates how a continuous progress program might be operated in remodeled space.

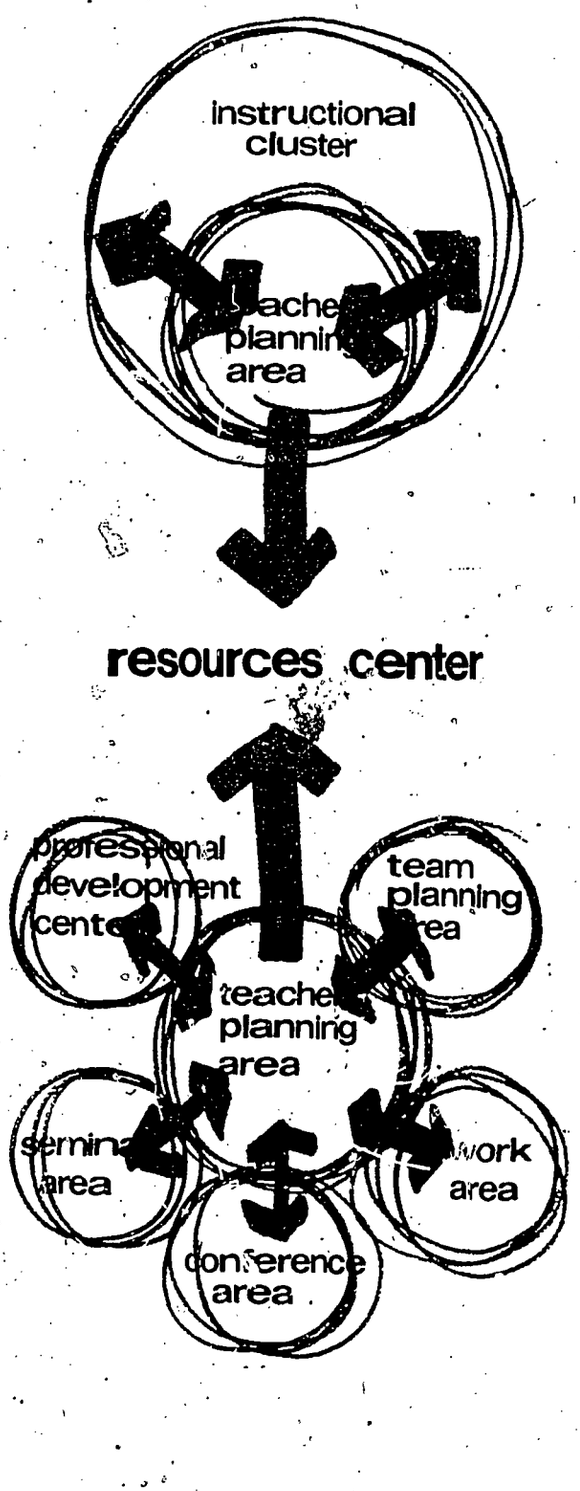




Individual student and faculty study centers are being increasingly used -- especially at the secondary school level.

teachers' professional facilities

The changing role of the teacher has been noted. Space allocations for teachers also change. Teachers no longer have a desk and closet in a specific classroom. They move much more freely between varying activities and spaces in an open plan. Teams of teachers cooperatively plan and administer many individual programs. They need space for this, and this space should be so located as to have a functional relationship with other specific school activities. Different approaches to instructional programming can vary these functional arrangements somewhat, as can the physical geometry of the existing school plants. But nonetheless, teachers and teachers' aides need to have spaces for team planning - office space, conference space, work space for preparing materials. They also need places to meet with students, and, a professional development center for their own research. In addition, dining areas and lounges away from normal children's activities are becoming required ingredients in school plans. In some cases, these facilities are concentrated into one central core; in others they are dispersed throughout the school.



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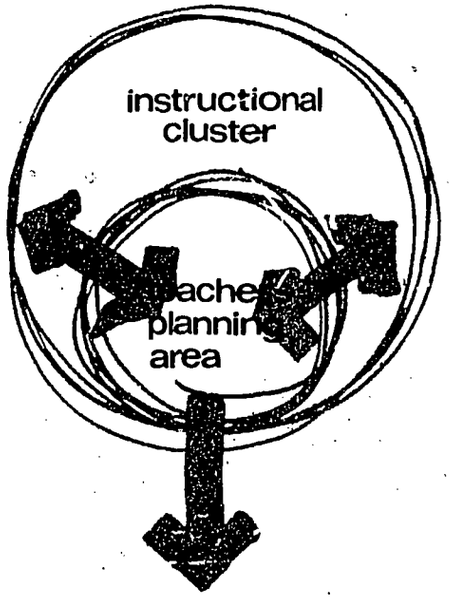
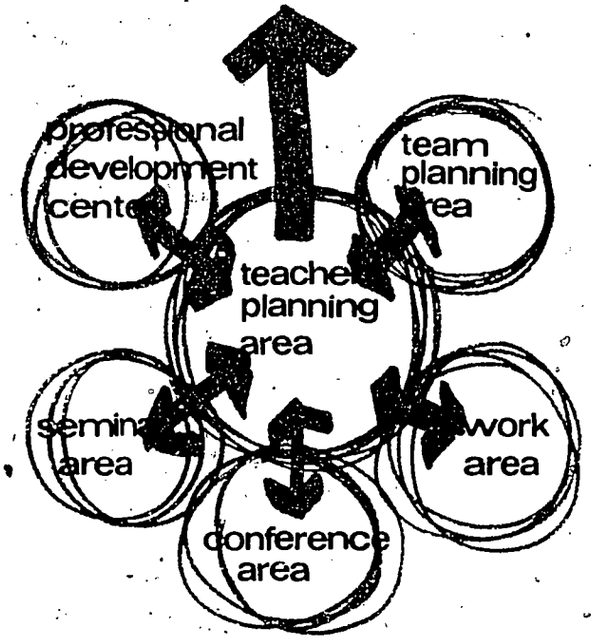
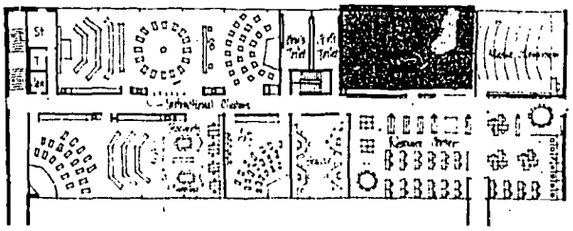


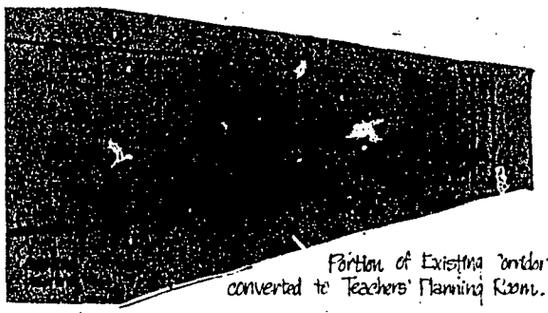
resources center

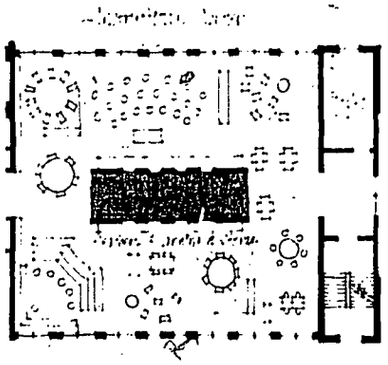




Proposed Teachers' Professional Center

Norfeldt Elementary School



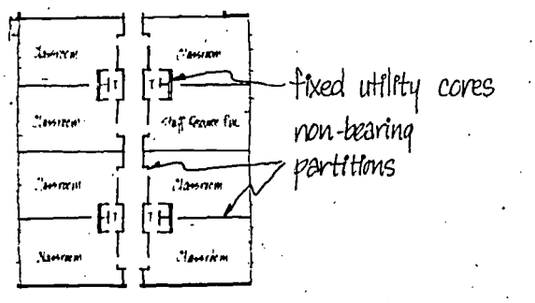


The heavy corridor bearing wall construction, common to most older schools, would appear to be the least adaptable to change. This example, however, typical of CHARTER OAK, ELMWOOD & MORLEY schools, shows how by only partially removing the interior bearing walls, a teacher planning area can be placed in a portion of the old corridor in the center of a continuous flow open instructional space.

open instructional spaces

It is apparent that these new approaches to education cannot be accommodated in the conventional school plan. It seems a paradox that while we talk of individualizing learning the architectural solution moves towards open planning, or the creation of large open spaces. But the traditional locked-in classroom cannot adapt easily or quickly to small seminar groups, large group instruction or independent study. What seems more reasonable is unobstructed space that can be subdivided rapidly into various configurations by moving furniture or relocating partitions. Variety is especially necessary in open plan areas. There is a danger that large undefined spaces might become monotonous. Breaks in ceiling heights, strong differentiations in color and texture, conversation pits and carefully selected furniture all add excitement to an otherwise predictable expanse of space.

To be effective open-plan spaces must be carpeted for acoustical control. Because of the prevalence of interior spaces and the need for adapting to group sizes, zoned heating and air conditioning systems are needed. In many cases, the original construction of schools presents no major problem, either technical or financial, in achieving this necessity.



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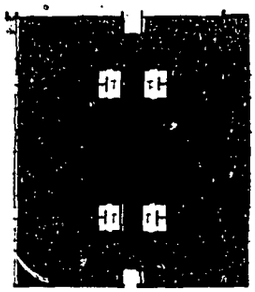
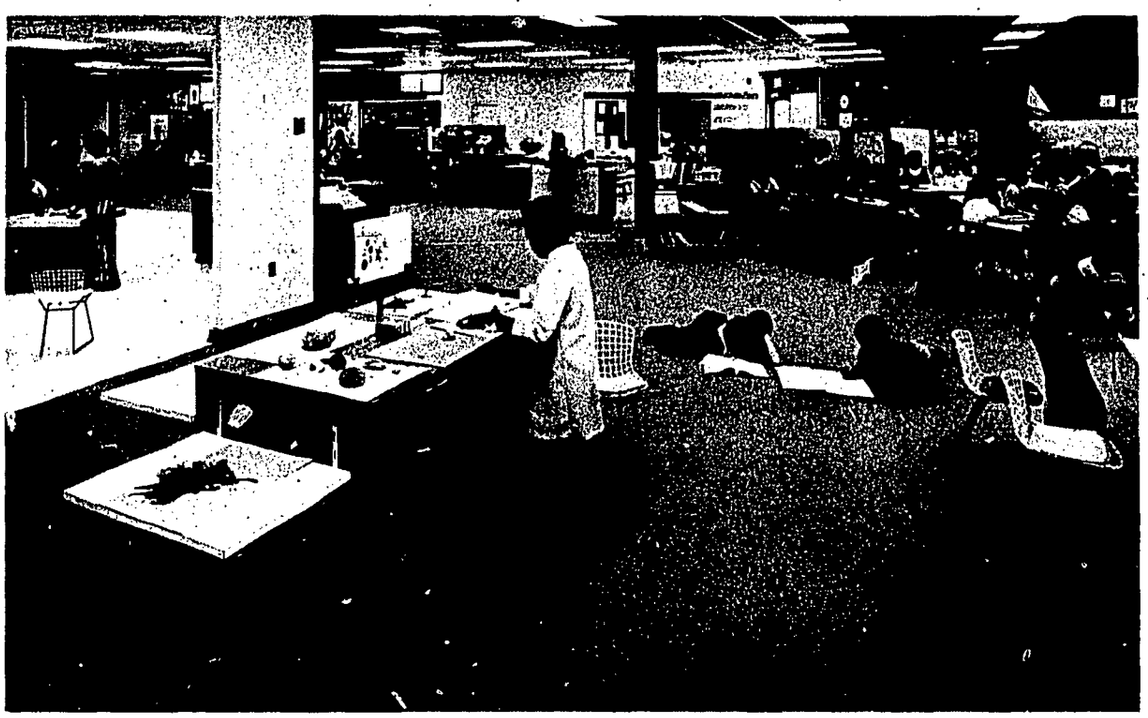
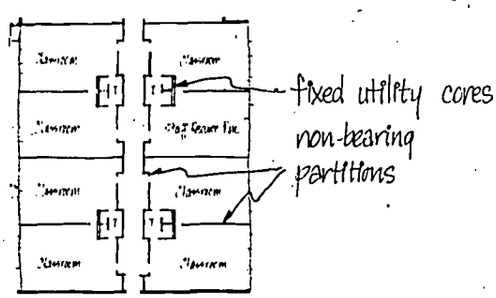


suggested

Bridlepath Elementary School





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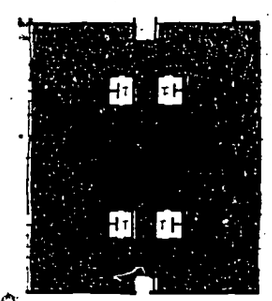

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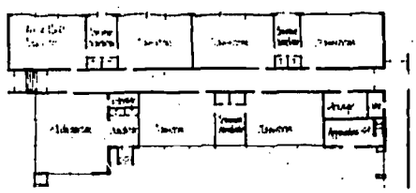
Bridlepath Elementary School



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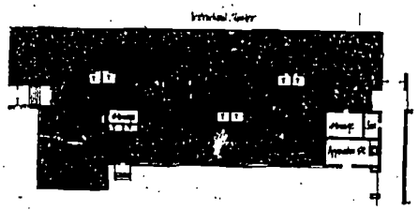


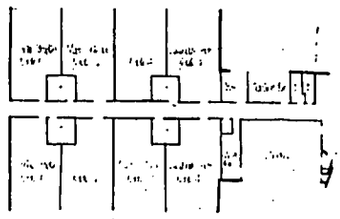
suggested

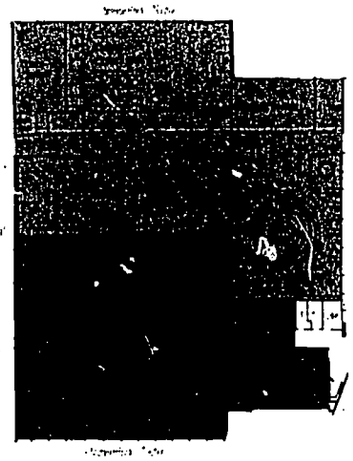
Webster Hill Elementary School

Where the plan and the construction allow, open instructional spaces can be obtained by removing the non-structural interior elements.

Where additions are required to add instructional spaces, these can frequently be most easily obtained in those structures with exterior curtain walls. These non-bearing skins can be removed and the new areas incorporated into the existing classrooms with only infrequent columns remaining to interrupt the resulting open areas.

existing





suggested

Wolcott Elementary School

exterior

existing

addition

sugges

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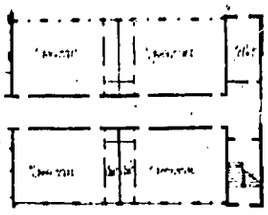

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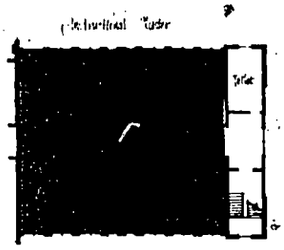
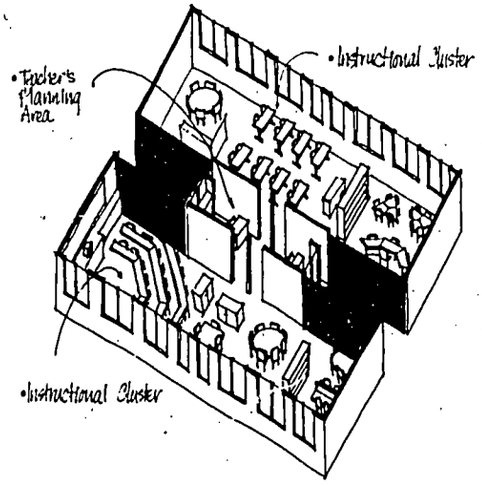
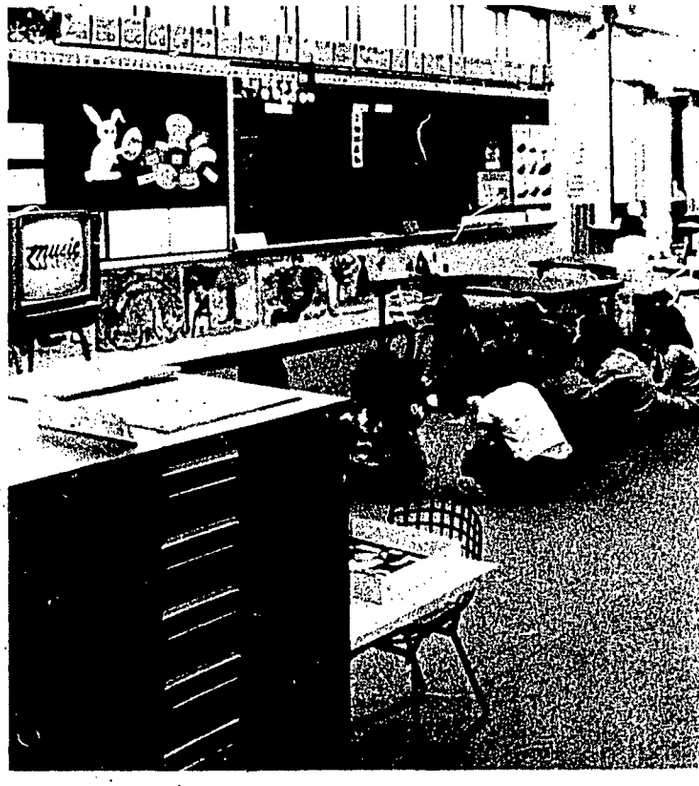


suggested

Charter Oak Elementary School





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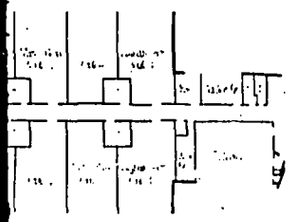

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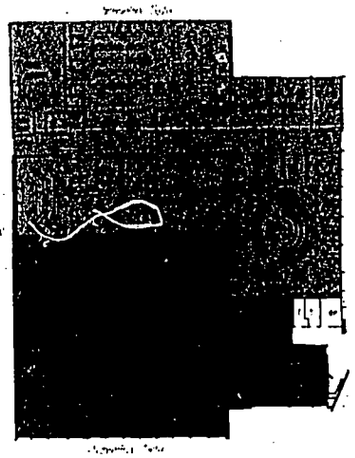
instructional Cluster



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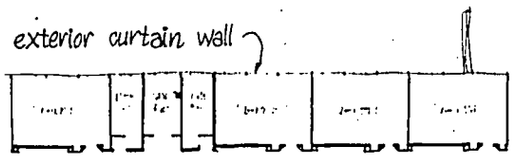
Wolcott Elementary School



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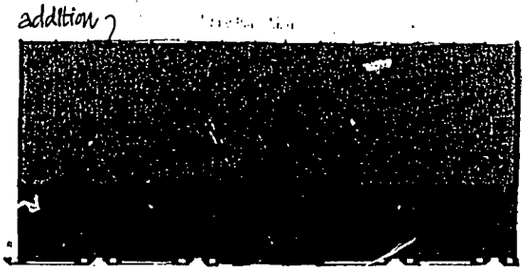


suggested

Bugbee Elementary School

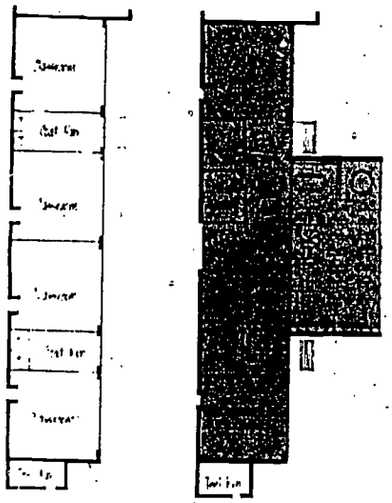
remodeled

addition

the learning resources center

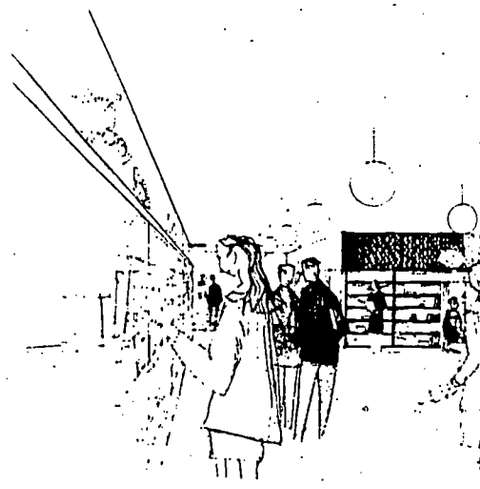
The school library of even five years ago generally is hopelessly inadequate for today's education. This is especially true when schools move to individualized programs. The very term library, which connotes a repository of reference books and readers, is being superceded by Instructional Materials Center or Learning Resource Center. The heart of instructional programs is built around the use of this new multimedia center by both students and teachers. All the tools of educational media now in use should be housed here. In addition to books and periodicals, audio-visual equipment such as tape recorders, projection machines, teaching machines, informational retrieval systems and copying machines form part of this facility.

Changes in space and location requirements follow along hand in hand with changes in function. Spaces are needed for listening and viewing. Storage needs become greater; work spaces, typing cubicles, developmental libraries, and conference rooms for faculty become necessary. As more miniaturized equipment becomes available some expansion pressures may ease, but as long as the resource center remains the everyday working hub of learning programs, the need for a facility far larger than now in use at most existing schools will continue. Where possible the Learning Resource Center should be placed in the center of the school - in the center of the learning activity.



existing suggested

Whiting Lane Elementary School



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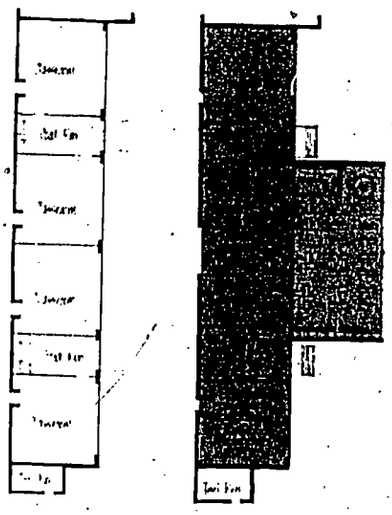

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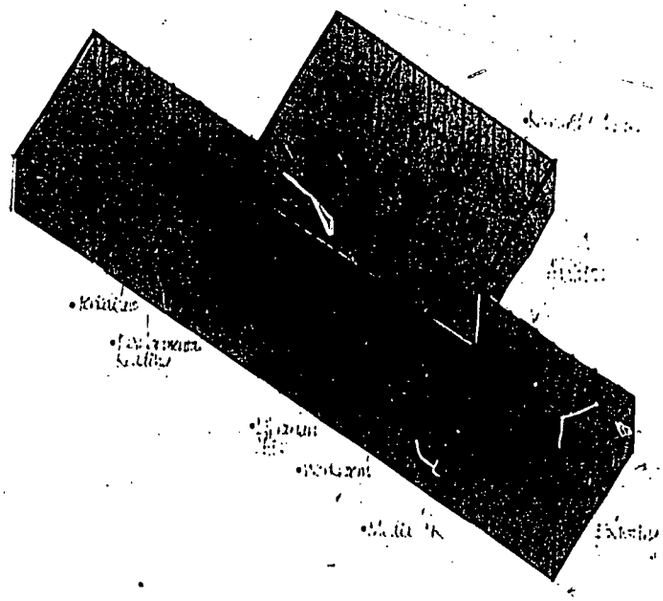
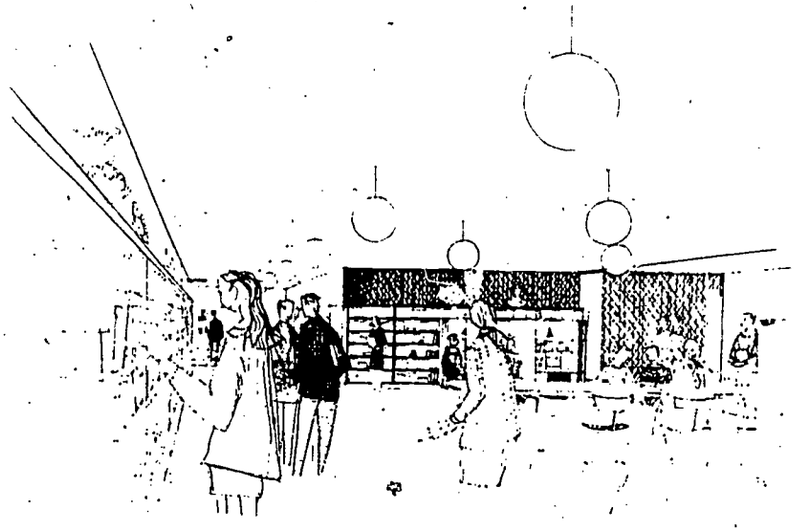
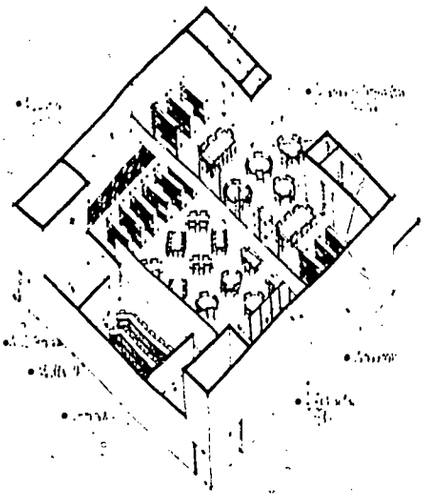
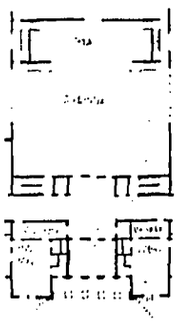
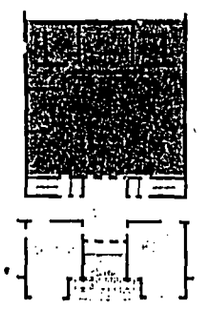


Whiting Lane Elementary School





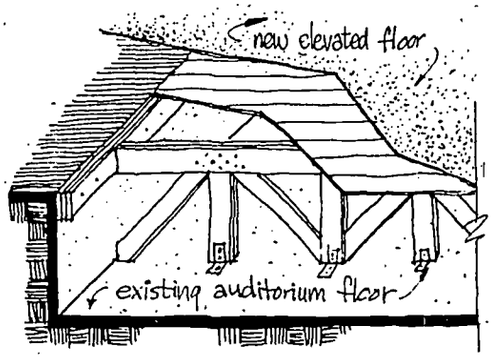


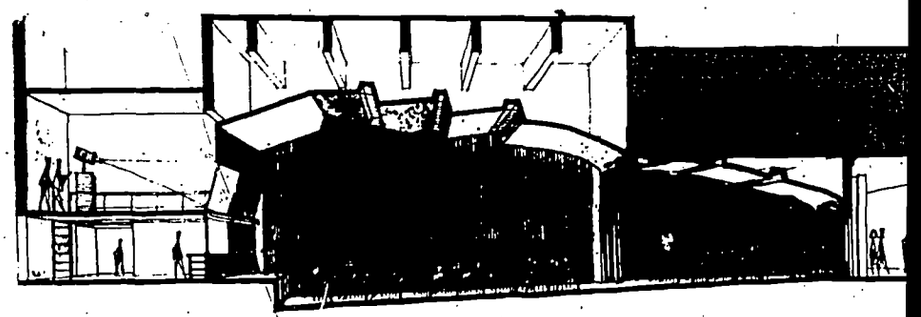


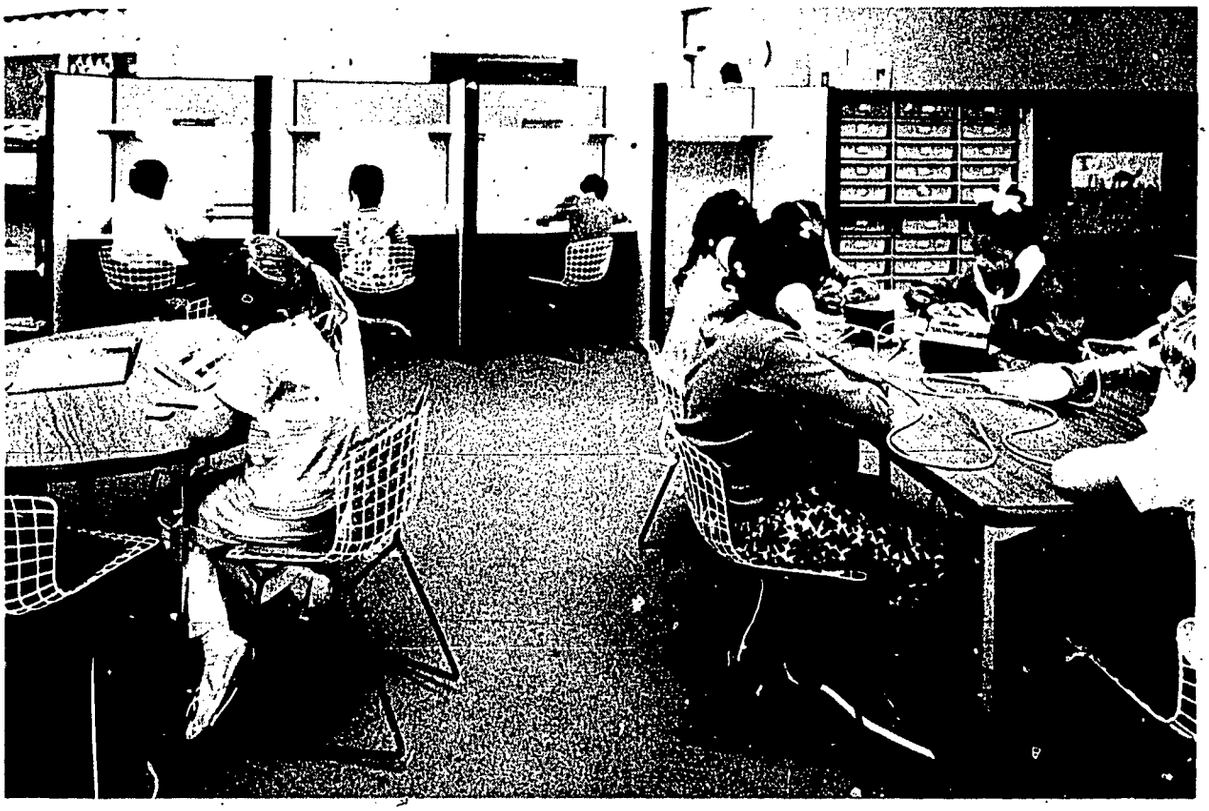
existing **suggested**

Sedgwick Junior High School

At ELMWOOD and CHARTER OAK Schools, new enlarged Resource Centers on the second floors extend over the former auditorium balconies.







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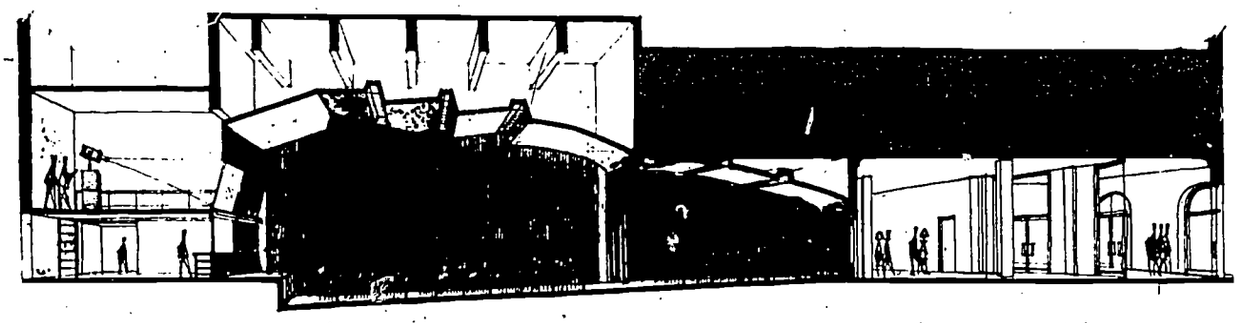

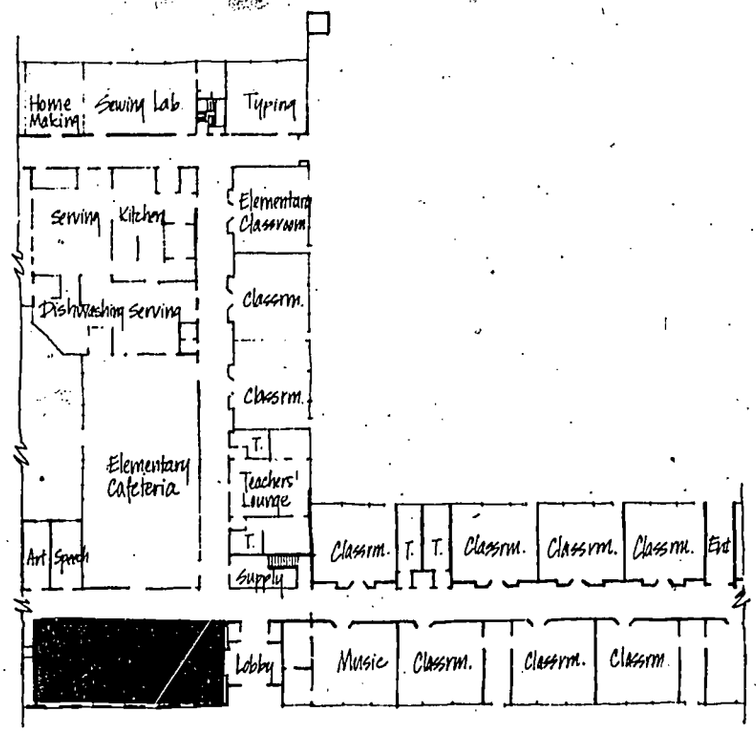

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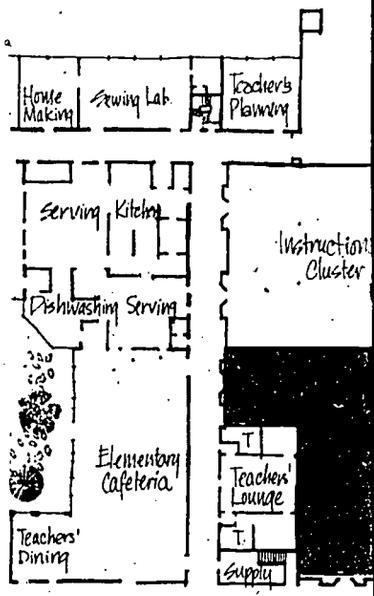
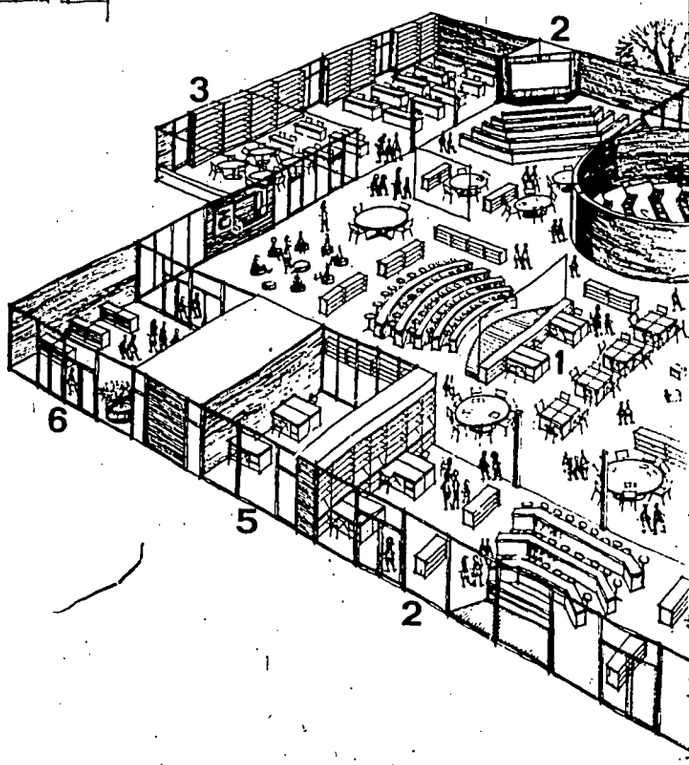


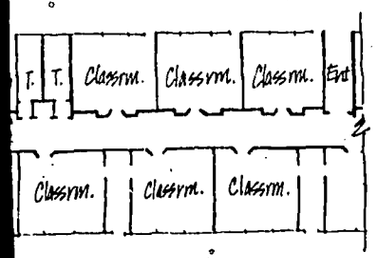
suggested

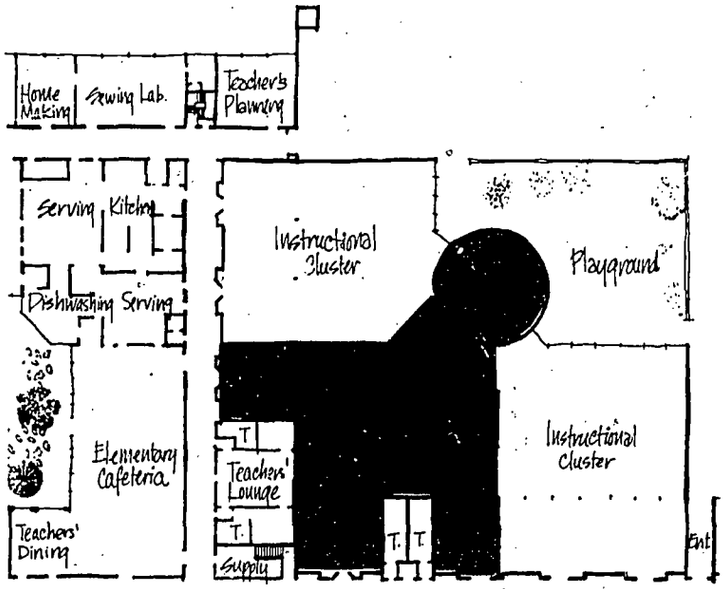
King Philip Elementary School

An inadequately sized library, remote from the self contained classrooms, is replaced at KING PHILIP Elementary School by an addition containing a centrally located learning resources center surrounded by two instructional clusters.



1. RESOURCES CENTER
2. INSTRUCTIONAL CLUSTER
3. TEACHER'S PROFESSIONAL CENTER
4. MEDIA CLASSROOM
5. LIBRARIAN OFFICE & WORKROOM
6. CATALOGUE AREA





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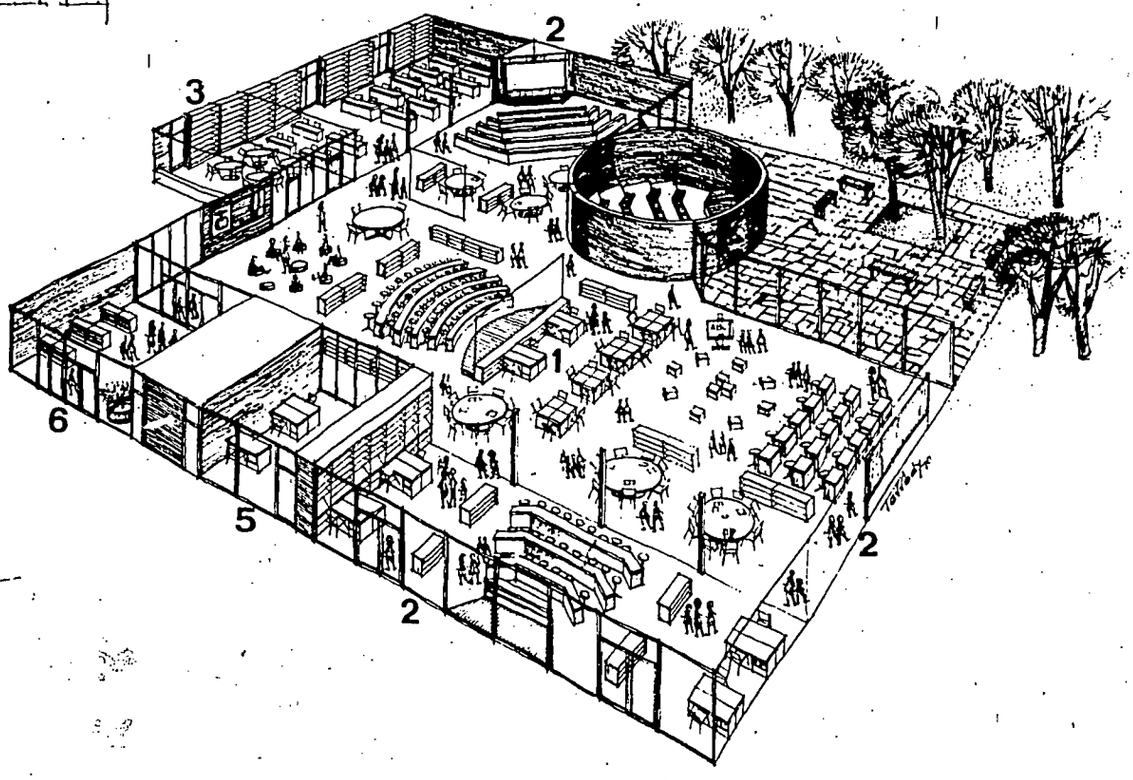

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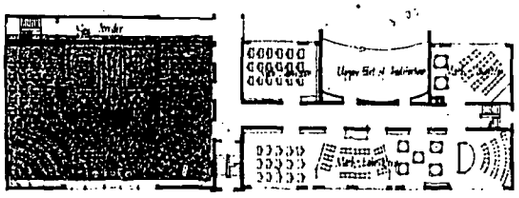
science areas

Increased interest in science education in the post-Sputnik era has created a demand for improved and enlarged facilities. This includes facilities at the elementary level for subjects that relate to the environment, space, health and nutrition, and physical life. All the remodeled elementary schools contain some science areas either as part of the instructional clusters or in separate facilities.

The secondary schools' strict departmentalization in the past is being altered for more meaningful concepts. For instance, mathematics and science complement each other. A closer or combined physical relationship can encourage joint problem solving. Even within the sciences themselves there are tendencies to drop the individual titles of biology, chemistry, physics and earth science and to treat the curriculum as an all-embracing umbrella of total science. This will have some effect on science facilities, and where possible these changes have been anticipated in the remodeled schools.



At ALFRED PLANT Middle School, a new Science Center is proposed on the second floor immediately above the new Resource Center. This relates closely to the expanded mathematics facilities remodeled in the existing building.

facilities for the arts

The town of West Hartford has always placed high value on community and school cultural programs. This is evidenced by the special emphasis given drama, art and music in the new Hall High School. The trend today is to merge the fine arts, home arts, industrial arts, music and the performing arts into a common program of unified arts. This has implications for planning, and where economically feasible these relationships have been considered in the revised plans. In some cases, building additions are proposed to accommodate the areas necessary for both group and individual development in the arts. In others, existing spaces were adapted to fill these needs.

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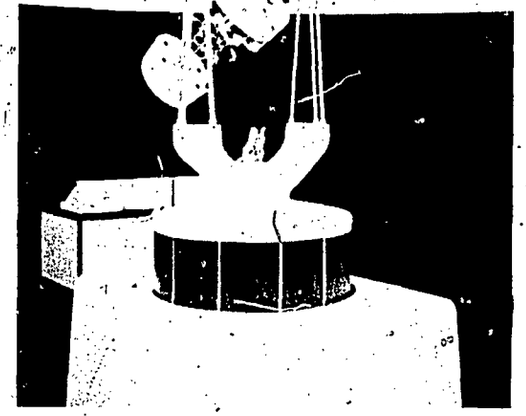

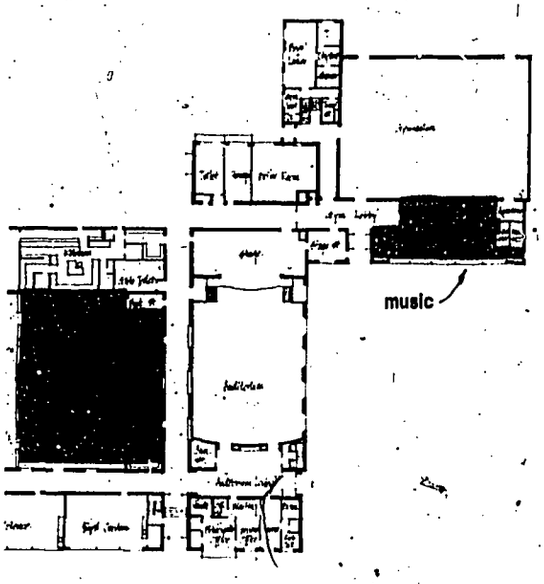

At WEBSTER HILL Elementary School, the former kindergarten and library can be converted to an art suite and music room respectively.

facilities for the arts

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spaces for beginning education

In recent years greatly increased emphasis has been placed on education for the very young. Psychologists and researchers are confirming what some educators have maintained for generations: that the earliest years of development are crucial to a child's later educational progress. Two, three and four year olds have a far greater capacity for creative learning than most of us have realized.

Thus early childhood or pre-kindergarten learning programs are becoming an important thrust in education and one that West Hartford's Board of Education instructed the consultants to investigate.

In some communities, separate early childhood learning centers, often not connected with any school, are being operated almost independently of other educational programs. Another approach, and the one favored for West Hartford, incorporates the preschool experience into a continuing progress program within each elementary school. In all cases, therefore, these facilities for early childhood learning were made part of the existing kindergarten areas, forming a beginning education nongraded unit involving the youngsters in a wider range and level of challenging experiences, and providing the proper continuity of instruction throughout the entire school.

For children of this tender age away from home for the first time, a sense of security within the learning environment is particularly important. From the physical point of view this includes a sensitive use of scale - low ceilinged areas, small doors, furniture and shelves that can be easily reached and used. Bright gay colors, soft carpets and lots of variety in spaces also help create a warm friendly atmosphere. In addition to flexible open spaces for busy activities children need quiet protected nooks, light and dark corners, places for rest and places for work, and places for running off steam outdoors. Most of these needs can be defined by furniture arrangements - often created by the youngsters themselves.

In some schools, changes in enrollment allowed the entire beginning education program to be incorporated within existing kindergartens. In others, adjacent rooms could be connected and remodeled. Only at two schools was it necessary to add new construction. Thus this wholly new town-wide program could be housed with a minimum of construction - 4,000 square feet of new additions, 18,000 square feet of remodeled spaces.

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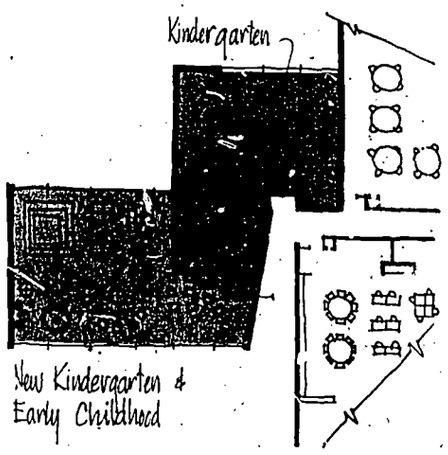
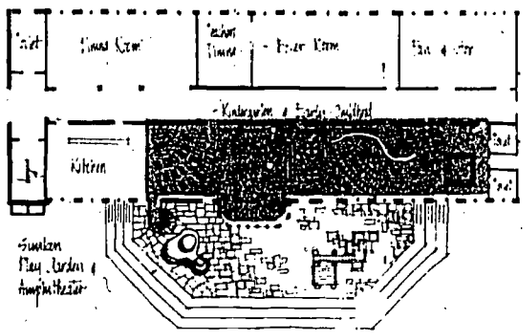
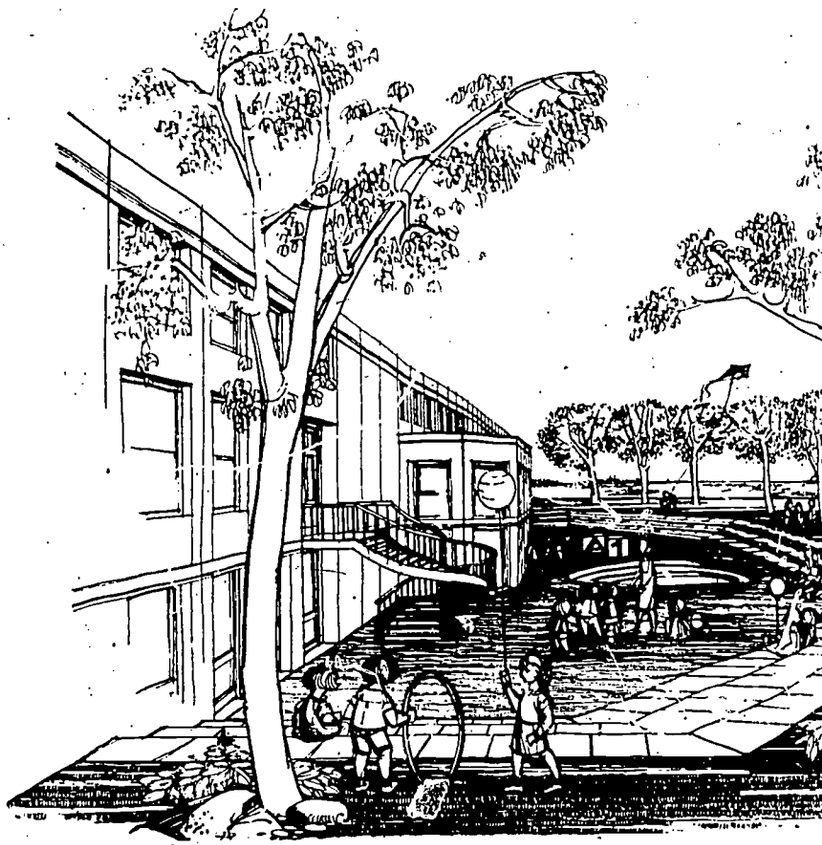
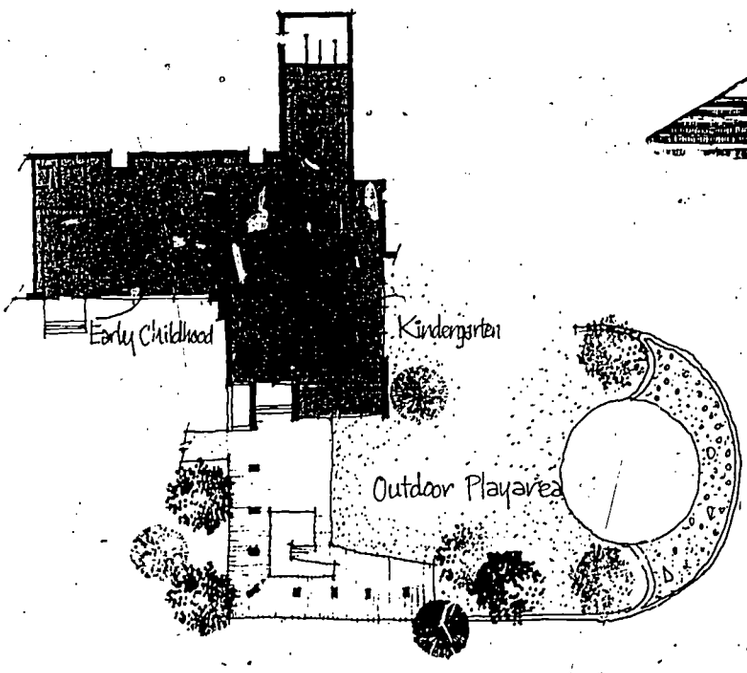


At BRAEBURN Elementary School, a small addition is proposed for early childhood facilities.

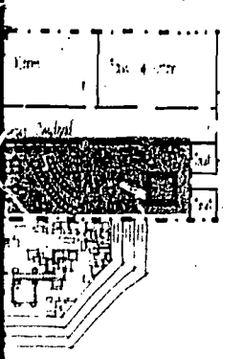


Perspective of a sunken garden and amphitheater which might be created at MORLEY Elementary School to give a controlled play area to the basement beginning education suite.





At the WHITING LANE School the early childhood center can be incorporated within the existing structure.



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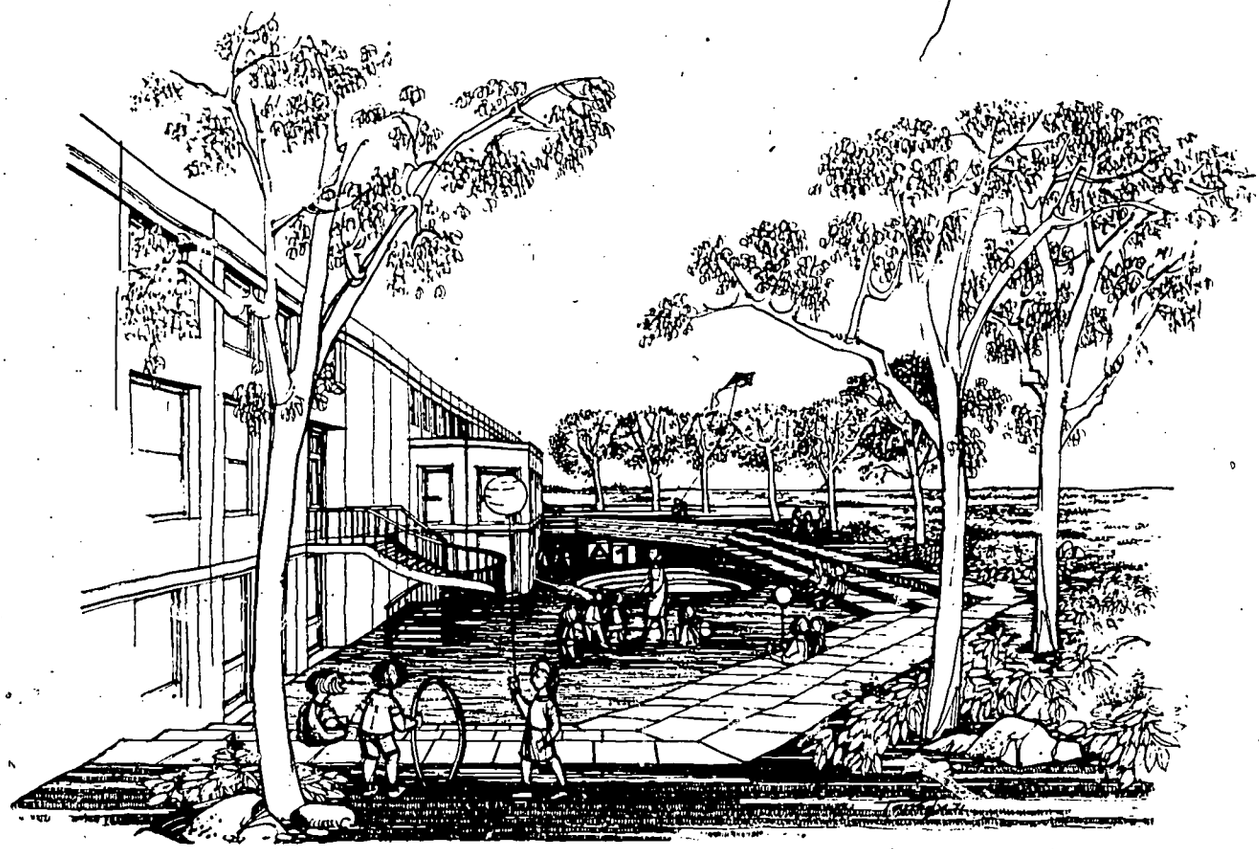

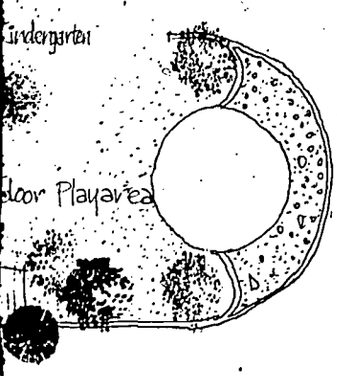

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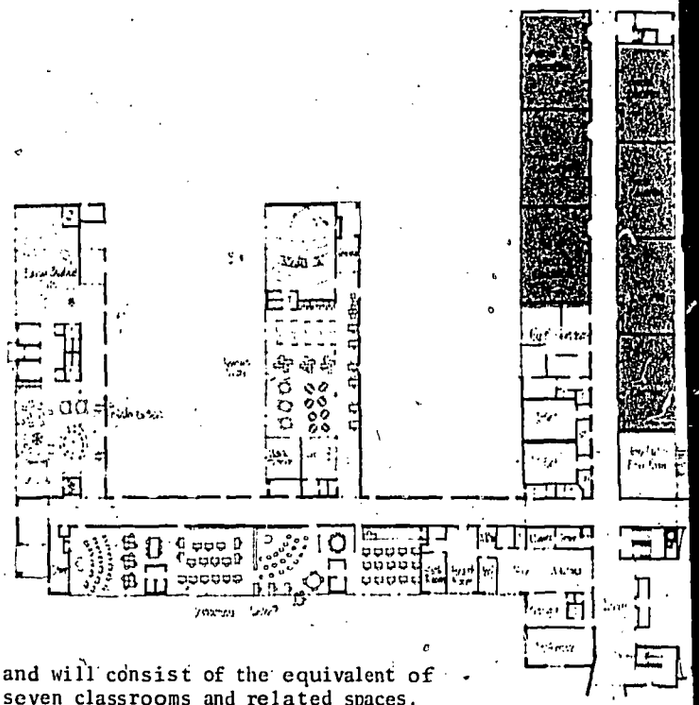
special education facilities

Approximately 10 percent of the children in this country born with physical or mental handicaps will need extra help from society if they are to have an equal opportunity in education. Many of the handicapped's limitations can be corrected by remedial measures, vision correction, testing and appliances, hearing aids, speech therapists and the like. Between three and five percent of the children, however, are not so easily helped. These include the emotionally disturbed, the severely physically handicapped, the educable mentally retarded, the trainable retarded, and those handicapped beyond the reach of present training techniques. Education, health and welfare officials and concerned citizens are making concerted efforts to reclaim as many of these unfortunate children as possible and make them a useful part of society.

In West Hartford, about 70 special education youngsters would be included in elementary school programs. Current practice is not to segregate these students in separate schools but to integrate them into regular school programs as much as possible, providing special help as needed. To strengthen these specialized programs to the greatest extent possible and at the same time provide opportunities for normal program participation, school authorities believe that the Duffy Elementary School (enrollment: 445) can be made to serve the elementary special education needs of the town. Facilities for these children will be easily accessible on the ground floor



and will consist of the equivalent of seven classrooms and related spaces. The remainder of the school will be remodeled in keeping with other similar schools in the system. Special facilities already in existence at the secondary schools will be maintained.

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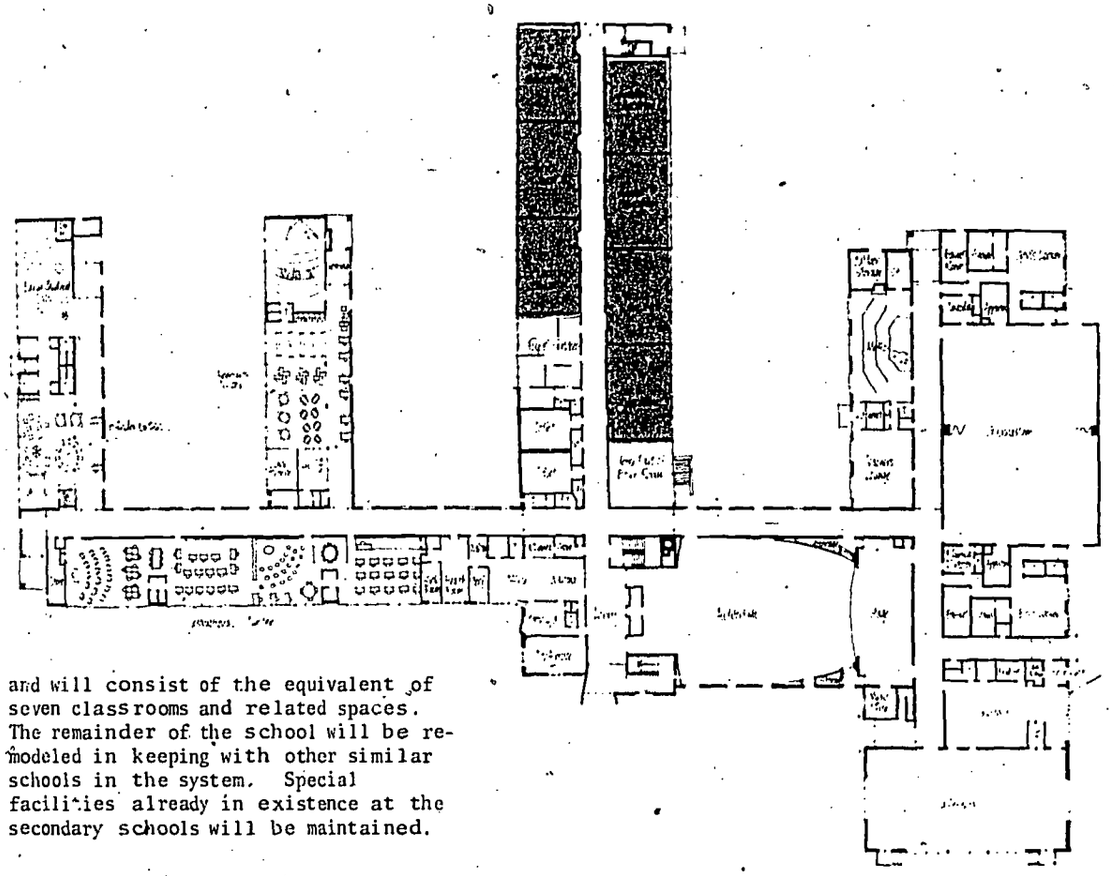

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occupational education

The Engelhardt report points out that while the academic strength of West Hartford's schools has been evident, career programs in vocational and technical education have not been sufficiently stressed. The report further notes that approximately 23 percent of the high school graduates are not college-bound and an additional 7 percent of one graduating class dropped out before matriculation.

The school administration recognizes the seriousness of this situation and is seeking effective ways to deal with it.

At a recent conference initiated by the school system, recognized experts in the field met with the staff and representatives of commerce and industry to explore ways in which cooperative programs could be fostered. World of Work programs already are in operation at some elementary schools and plans are to increase the number participating. A limited on-the-job training program exists at the high schools.

In terms of facilities for occupational education it was generally agreed that new building construction was not necessarily the answer to the problem. If space could be made available through rescheduling and extended time, certain spaces could become available for special needs. The major thrust, however, will be in using non-school facilities for specialized training through the cooperation of civic and private groups.

school sites and physical education areas

An examination of the school sites shows a wide variation in adequacy. Some schools are adjacent to town parks and reap the added benefits of open land. Others are hemmed in by commercial properties. This pattern is common to all urban areas. Many states have area criteria for school sites based on pupil population, but more often than not city schools never meet them. A more flexible approach than size alone must be taken for evaluating site adequacy.

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BRADLEPATH
LLOYD H. BUGBI
CHARTER OAK
LOUISE DUFFY
ELMWOOD
KING PHILIP
EDWARD MORLEY
ERIC G. NORFEL
FLORENCE E. SM
WEBSTER HILL
WHITING LANE
WHITMAN
HENRY A. WOLC
JUNIOR HIGH SC
KING PHILIP
ALFRED PLANT
SEDGWICK
TALCOTT
SENIOR HIGH SC
CONARD
OLD HALL
NEW HALL

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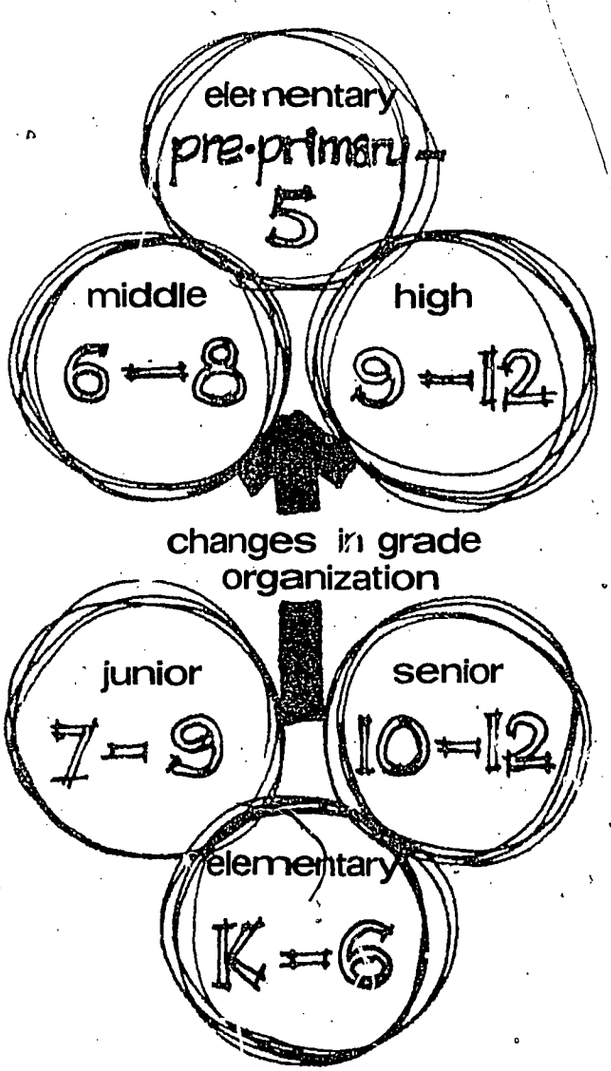
On those obviously crowded sites the School Board has taken the position that adjoining land should be purchased as it becomes available at reasonable cost. In some cases additional physical education programs must be worked out at other locations. This approach is common practice in London, where sport parks in the suburbs serve several city schools. We believe the problems can be met by cooperation between community agencies. A similar condition exists in regard to indoor physical education facilities. One major deficiency seems to be the lack of swimming pools at any of the schools. Steps are being taken to remedy this situation, starting in the high schools. Greater emphasis is being placed on a lifetime sports program and a variety of facilities are required.

SCHOOLS	SITE SIZE (ACRES)
ELEMENTARY SCHOOLS	
MARY LOUISE AIKEN	14.63
BEACH PARK	3.39
BRAEBURN	15.15
BRIDLEPATH	12.97
LLOYD H. BUGBEE	16.47
CHARTER OAK	5.10
LOUISE DUFFY	19.28
ELMWOOD	5.17
KING PHILIP	(KING PHILIP J.H.)
EDWARD MORLEY	4.53
ERIC G. NORFELDT	17.85
FLORENCE E. SMITH	4.02
WEBSTER HILL	14.75
WHITING LANE	(PLANT)
WHITMAN	2.60
HENRY A. WOLCOTT	22.96
JUNIOR HIGH SCHOOLS	
KING PHILIP	39.03
ALFRED PLANT	12.17
SEDGWICK	16.36
TALCOTT	12.57
SENIOR HIGH SCHOOLS	
CONARD	42.93
OLD HALL	11.63
NEW HALL	55.21

changes in grade organization



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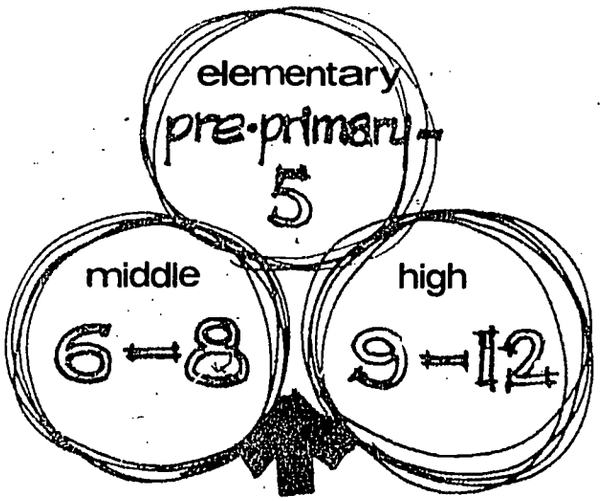

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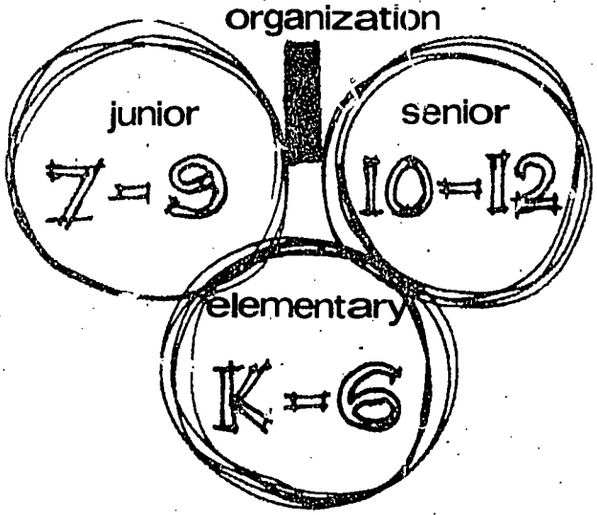
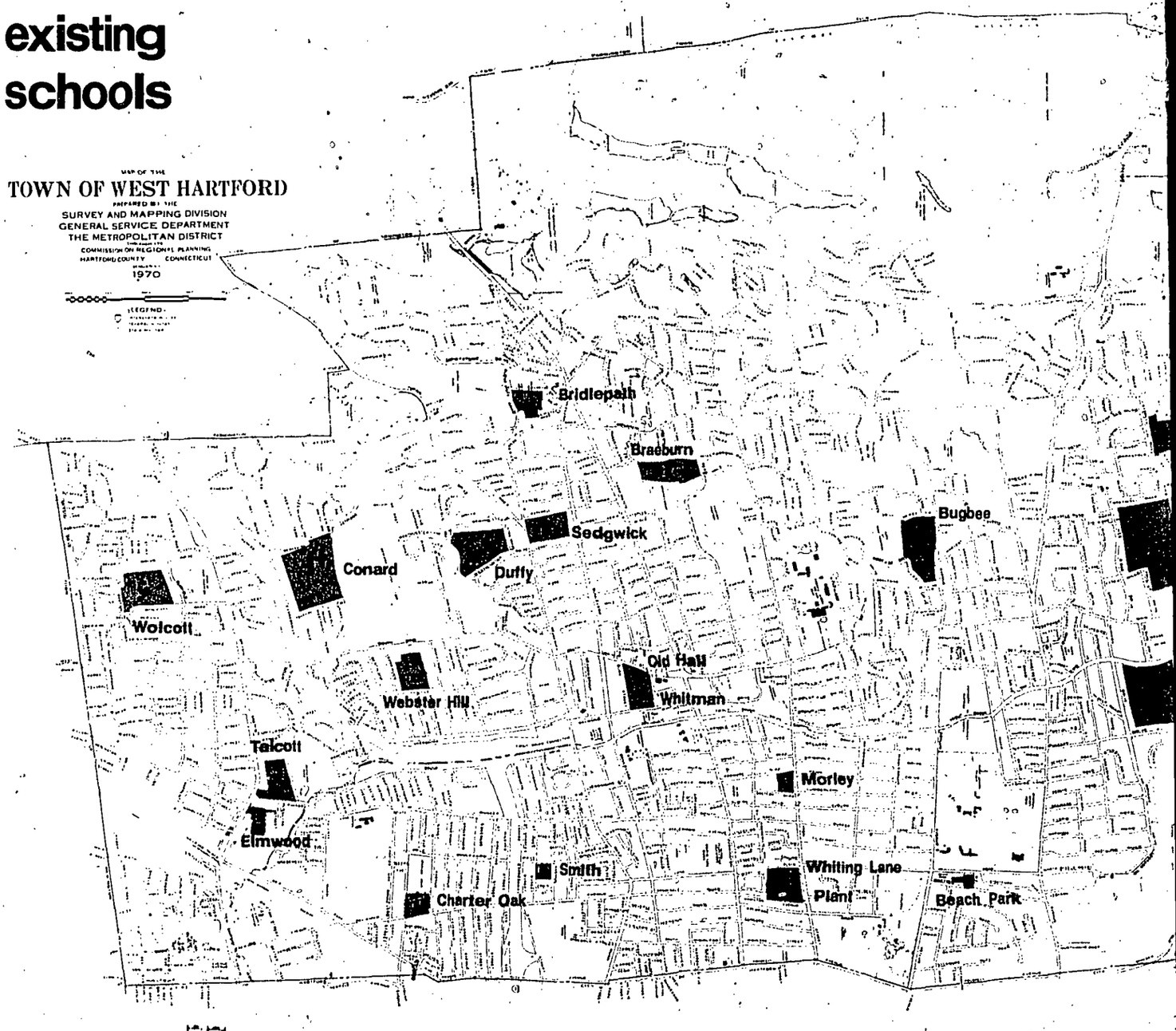


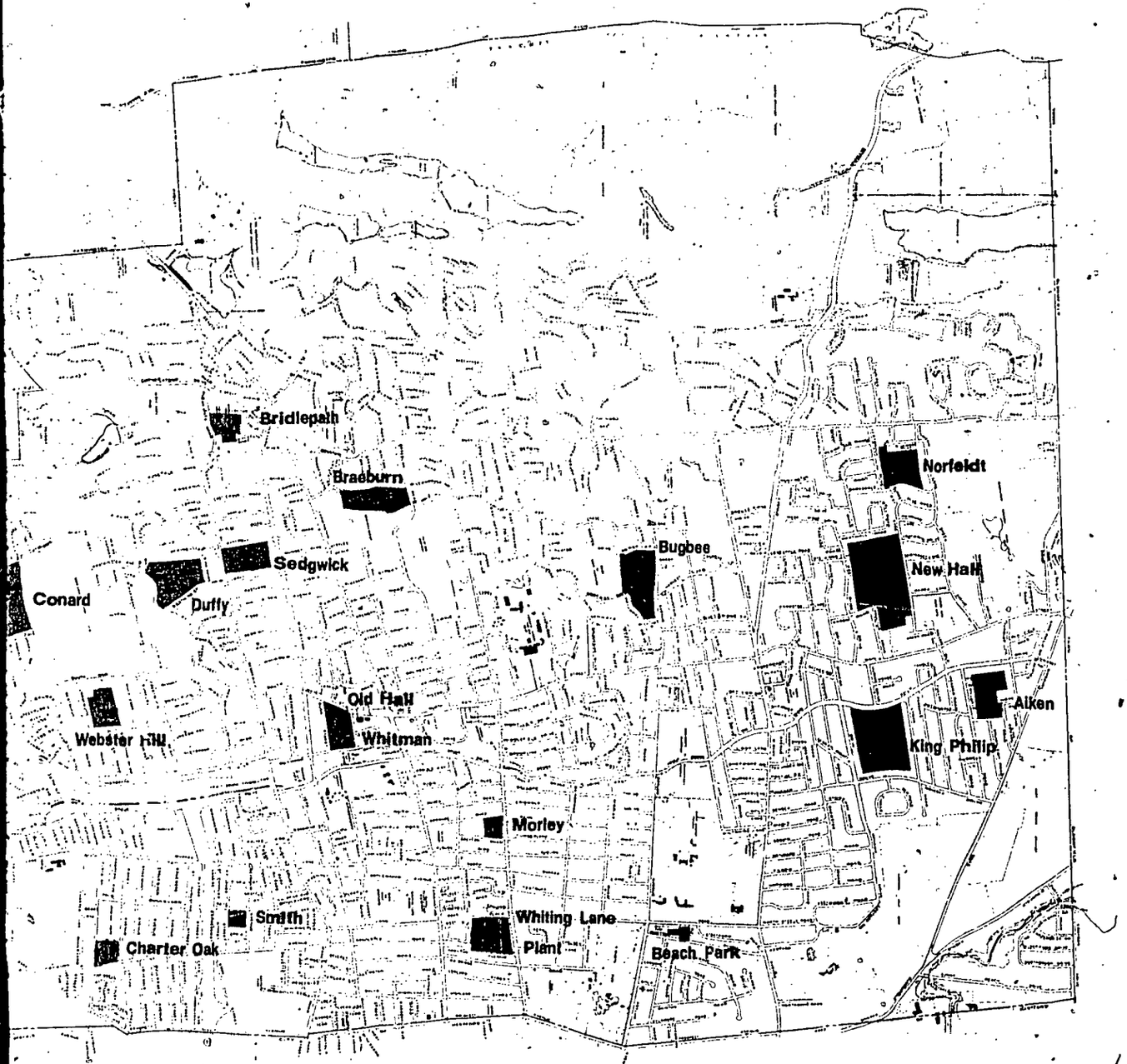
The present grade structure in West Hartford encompasses K-6 elementary schools, 7-9 junior high schools and 10-12 high schools. This has been the most common grouping in the country for the past 50 years, and it superceded the earlier kindergarten through eigth grade grammar school and four-year high school organization. The reasons which brought about the present structure, notably the desire to provide a suitable terminal education for those two-thirds of all pupils who in 1905 left school before grade nine, are now largely irrelevant. Today there is a growing movement to return to the four-year high school, and so include the sixth or even the fifth grade in a middle school organization.

Children grow up faster today than they did in earlier generations. They are physically bigger and acquire wide-ranging knowledge and social awareness at an earlier age. College-bound students begin their preparation sooner, and colleges usually require transcripts from the ninth through the twelfth grades. These are some of the reasons that led to the recommendation that West Hartford schools move to a preK-5 elementary, 6-8 middle and 9-12 high school organization. The architectural studies are based on this premise.

The Engelhardt report suggests that such an organization could over the years lead to an ultimate ungraded, continuous progress, nonfailure system envisioned in four stages. The first stage could encompass children of ages 3 to 6. The second could cover ages 6 to 10, and the third 10 to 14. The last stage would be for students aged 14 to the completion of their secondary education.

location of existing schools




Bridlepath
Braeburn
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Conard
Duffy
Webster Hill
Old Hall
Whitman
Morley
Smith
Charter Oak
Whiting Lane
Plant
Beach Park
Bugbee
Norfeldt
New Hall
Alken
King Philip

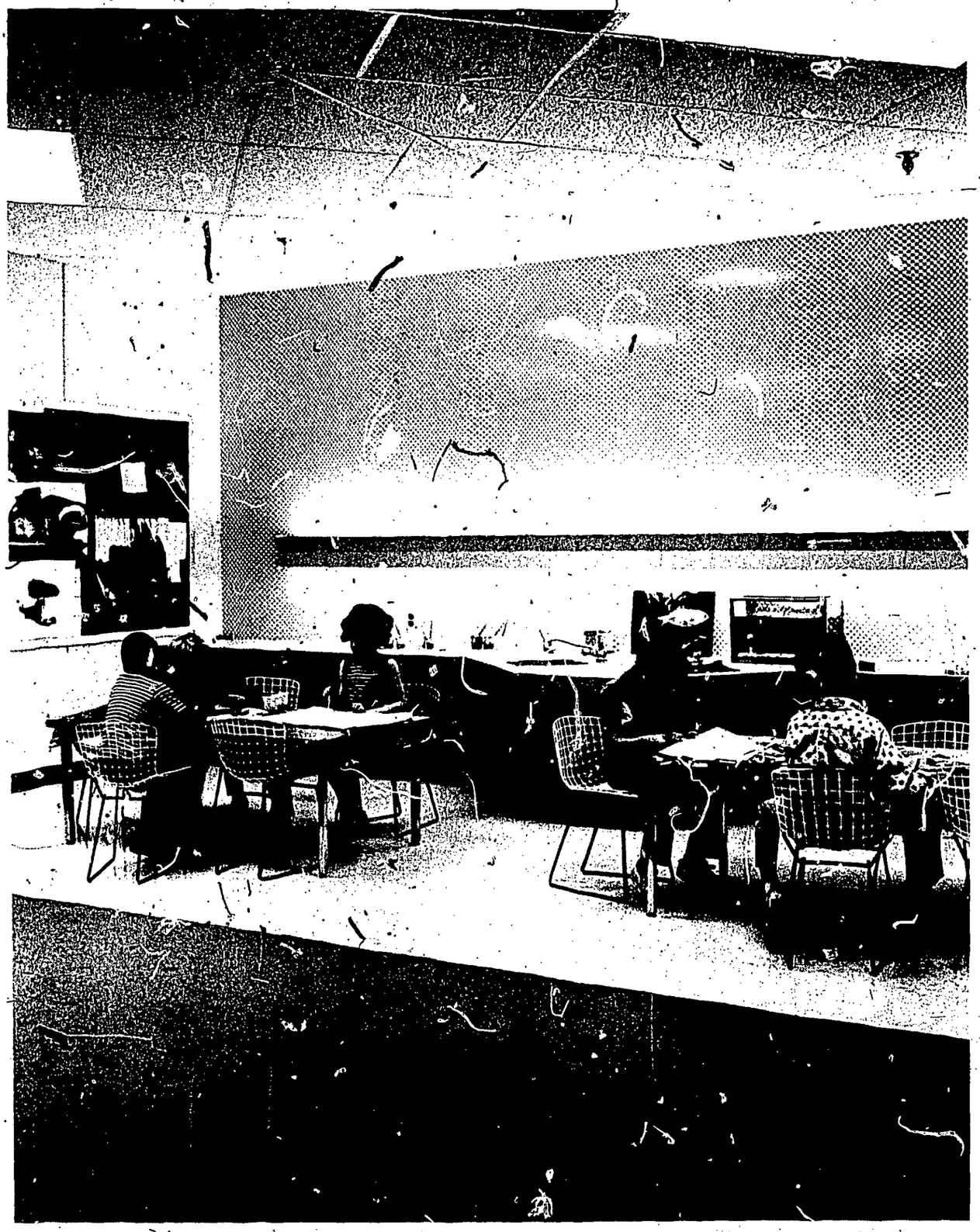
elementary schools

Many of the problems facing educators everywhere in revitalizing their obsolete school facilities can be found by examining the 16 elementary schools in West Hartford. Not all are ancient - one is only seven years old - but another dates to 1915. Many have had later additions. One of the biggest assets has been the generally high level of maintenance. All of the schools had been planned for a series of uniformly sized classrooms, all in a row, and with generally inadequate libraries and support facilities.

The first question for each individual facility was how to replan in order to make the building adapt to new educational programs. The next was whether it was economically feasible and whether it furthered the total city-wide program. Two elementary schools, Whitman and Beach Park, are recommended to be closed. This is not because they are in appreciably worse condition than the others - in fact one is an especially appealing school - but rather because location, size and other overall considerations made these two surplus to the needs of the elementary population. They might be used for other special educational or town uses without major modifications.

In general, the older school buildings with their solid masonry bearing walls and short spanned floor construction posed the greatest problems. The more recent schools, with at least partial steel framed structures and nonbearing walls were more adaptable to remodeling and expansion.

The following case studies illustrate some of the problems and possible solutions to each.



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case study 1

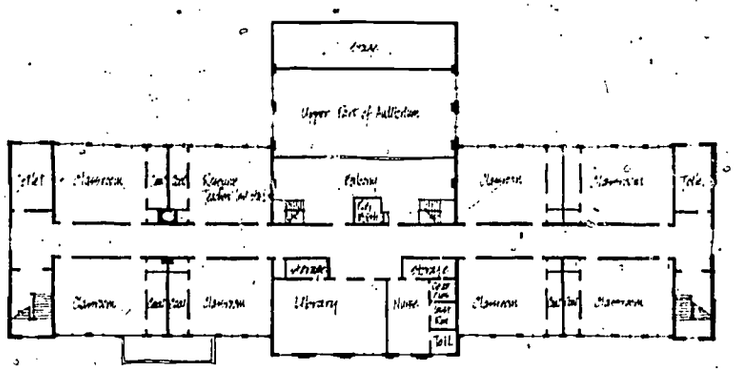
charter oak and elmwood elementary schools

These two schools were built from the same plans, with only minor differences in the layouts. For practical purposes the proposed solution applies to both.

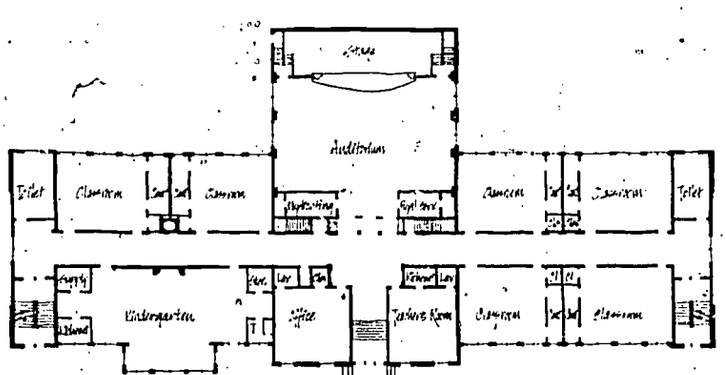
Charter Oak is on an attractive site adjoining a small neighborhood park; Elmwood is adjacent to a shopping center near a busy intersection in a commercial zone. Both schools have used the existing space well to provide limited facilities for art, guidance, pupil services, and team planning.

The plans are typical of the corridor bearing wall construction used in the 20's and 30's. But by judicious removal of parts of these solid walls and replacement with steel beams it was possible to create four instructional clusters in each school.

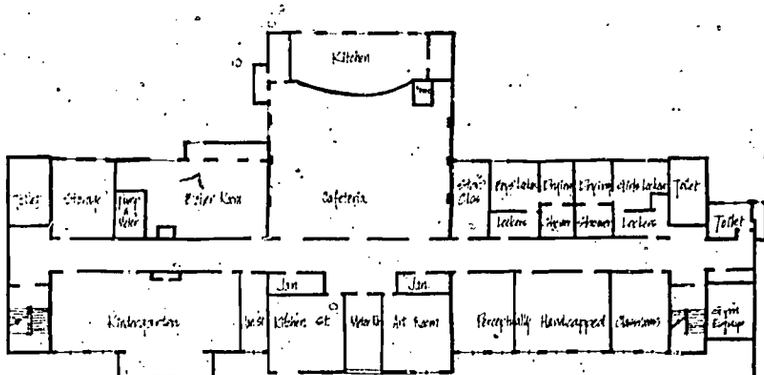
In the center of each cluster, in the old corridors, small teacher planning and storage spaces were added. These look out to the learning areas through glass end walls. Other features of the conversion are the expansion of the resource center to include the auditorium balcony and the conversion of spaces in the basement to special purpose uses. The capacity of each of these schools will be 390.



Second Floor Plan

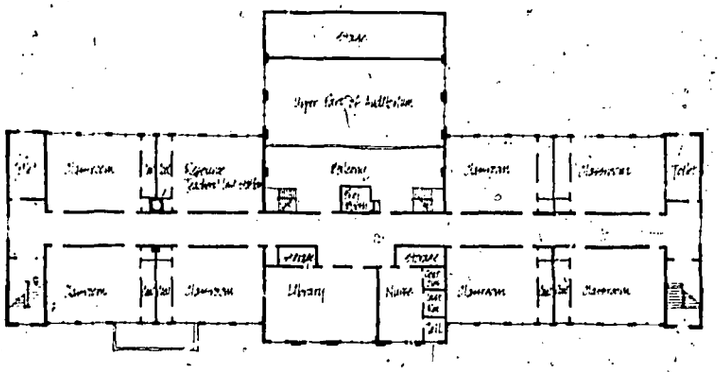


First Floor Plan

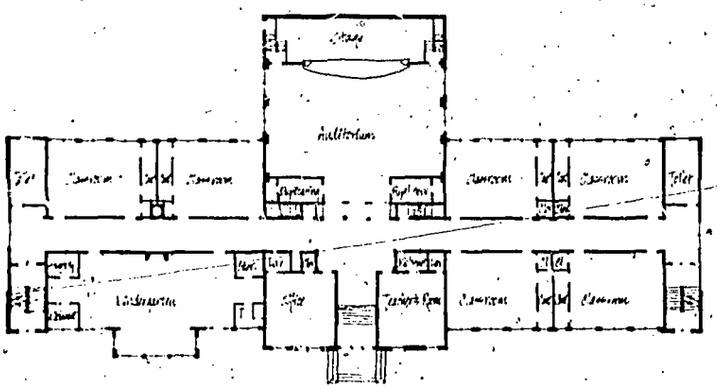


existing

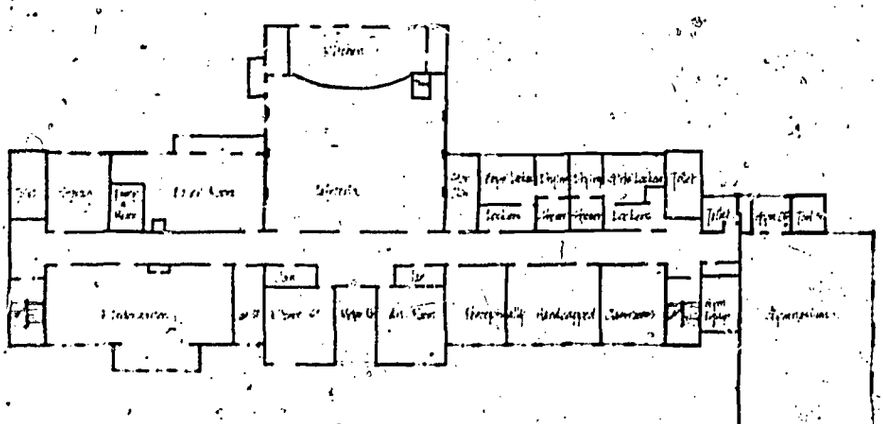
Basement Plan



Second Floor Plan



First Floor Plan

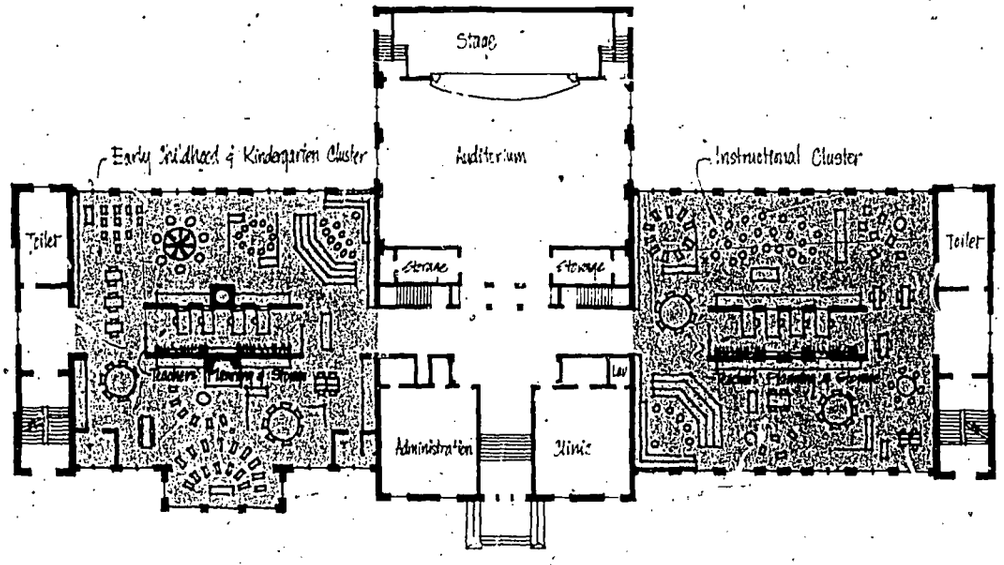


Basement Plan

Charter Oak School:
Dates of Construction and Additions:
1929, 1953, 1959.
Site Size: 5.1 acres

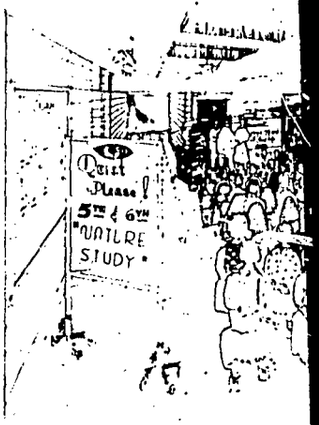
Elmwood School:
Dates of Construction and Additions:
1928, 1951, 1959.
Site Size. 5.2 acres

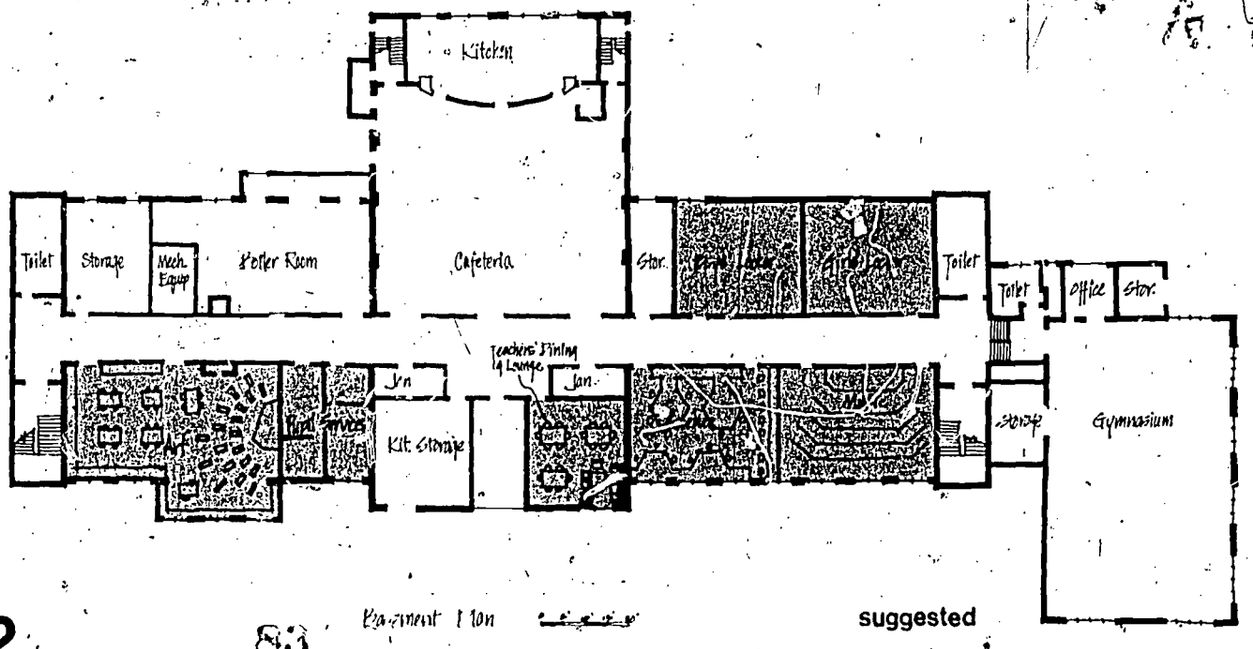
existing



First Floor Plan

suggested





Basement Plan

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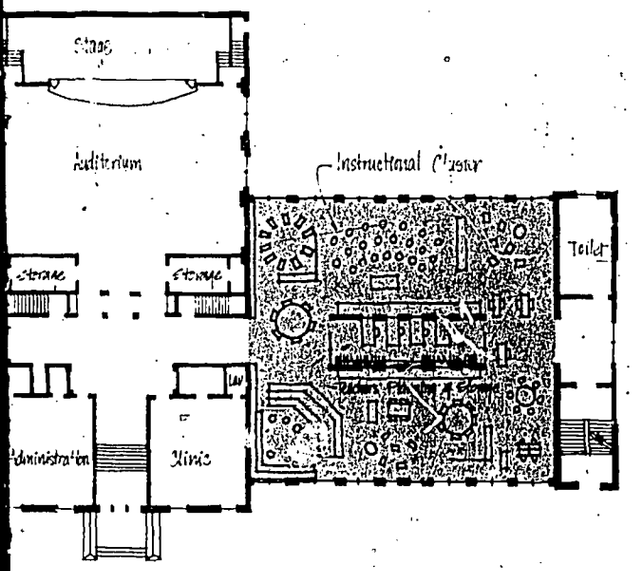

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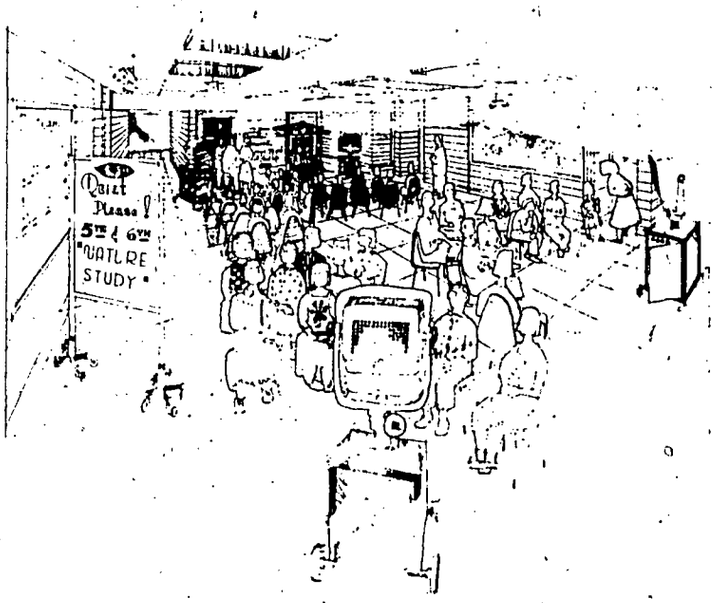
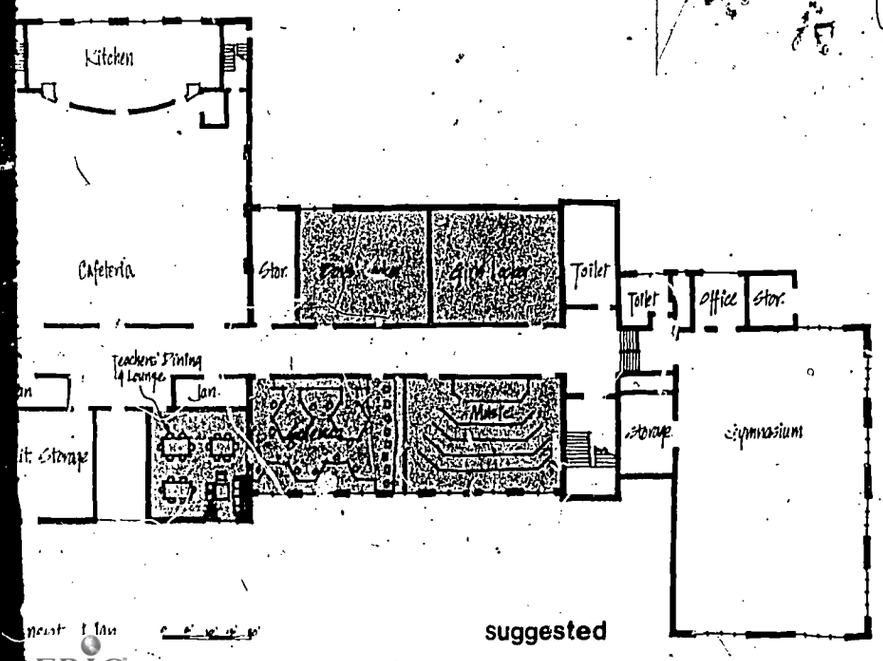
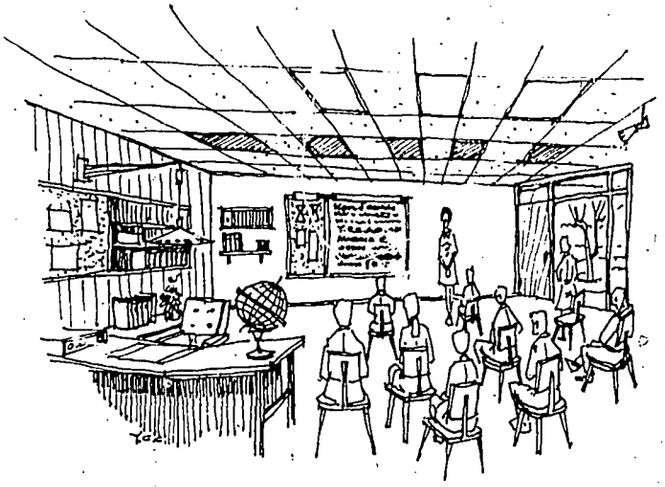
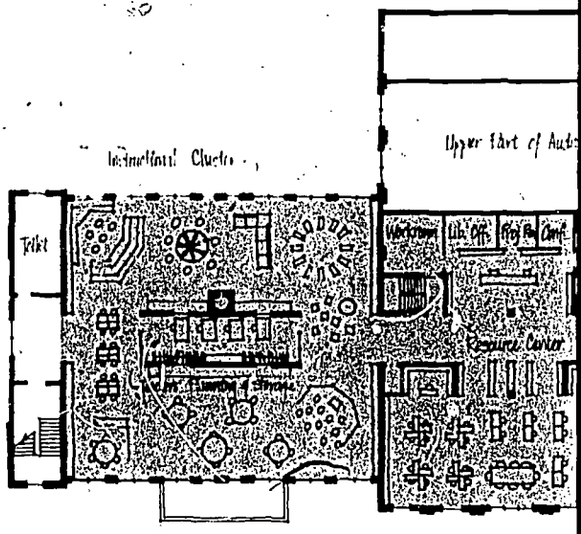




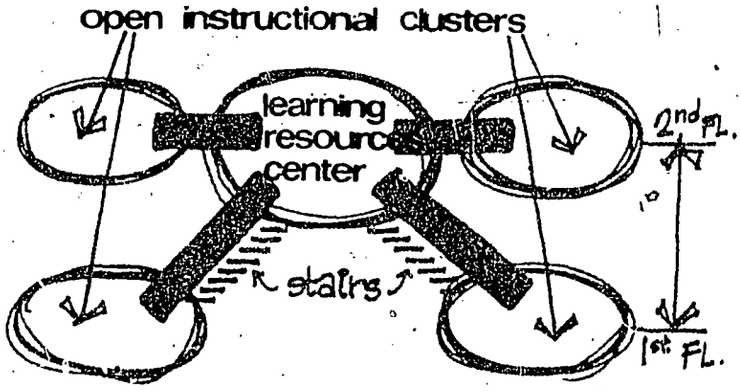
suggested

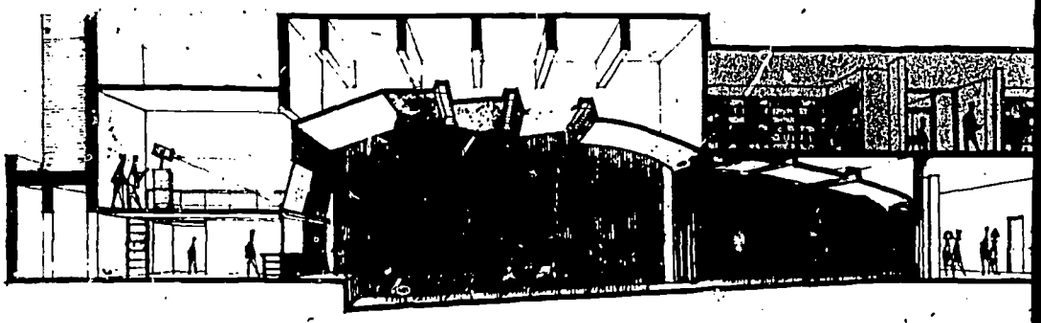
remodeled

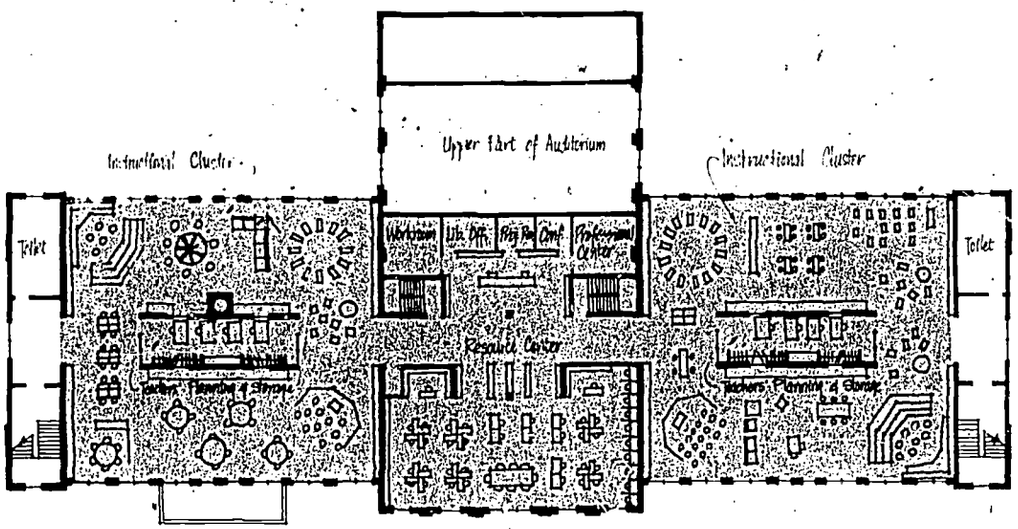




Second Floor Plan



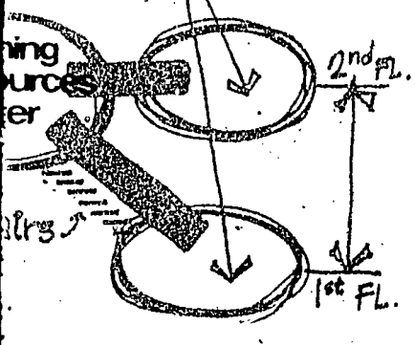


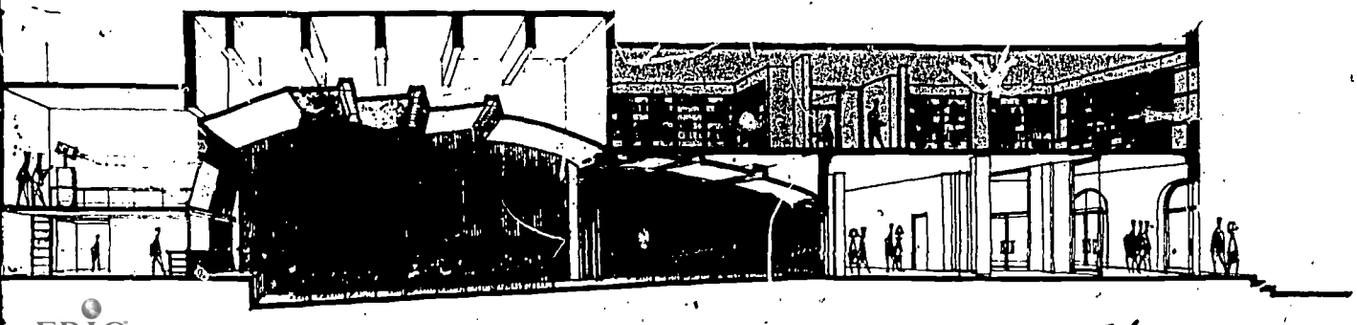


Second Floor Plan

suggested

nal clusters



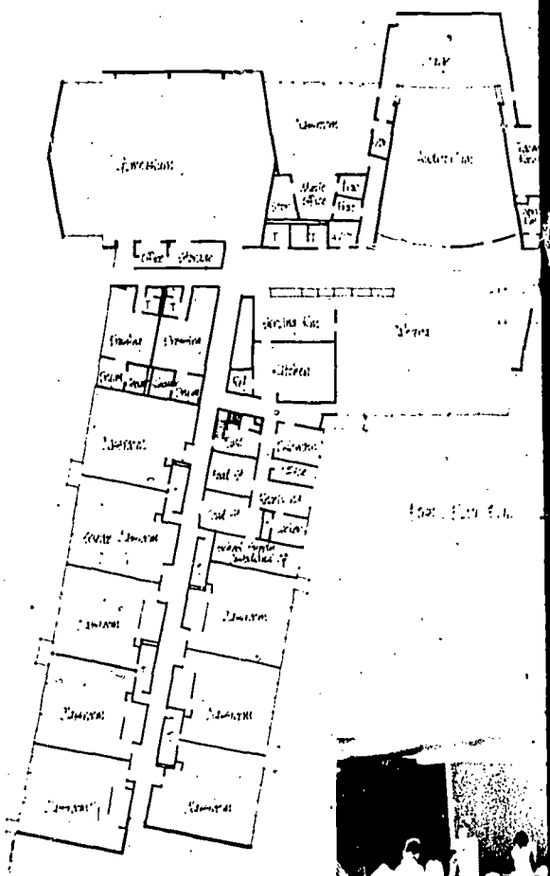


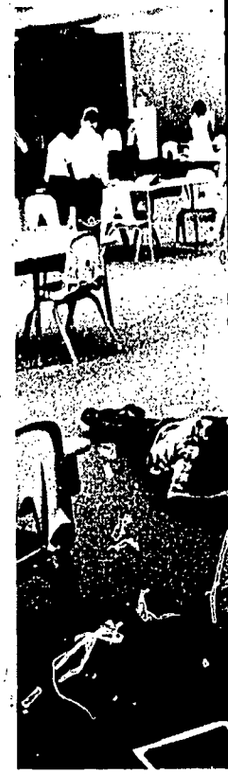
case study 2

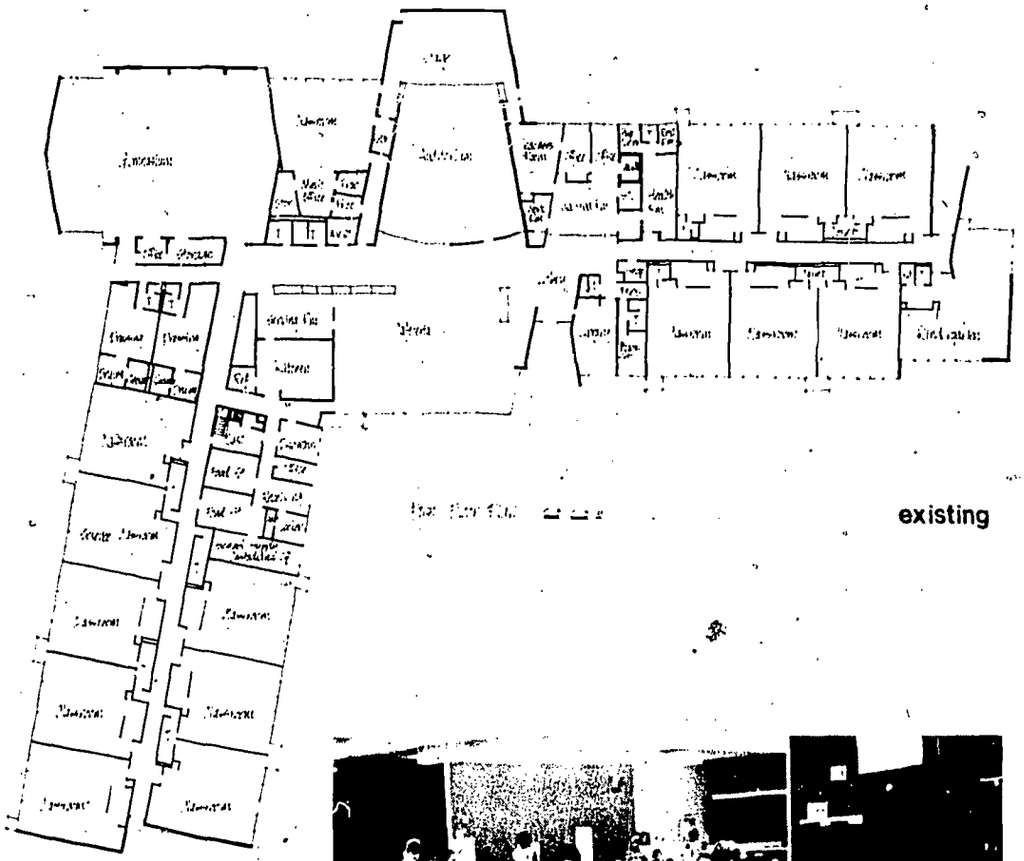
braeburn elementary school

Date of Construction: 1956
Site Size: 15.2 acres

Braeburn represents the newer schools where the problems of renewal are not quite so difficult. Located on a beautiful site, the school has pleasant, spacious classrooms but a very small library and limited facilities for music and other special programs. A major problem is overcrowding. Structurally, the exterior steel frame and curtain wall construction, common to many schools of its day, permitted an extension of the existing classroom areas to form the required large flexible instructional clusters. Specialized instruction will be conducted in some of the self-contained classrooms, and a greatly enlarged library-resource center uses the former cafeteria, which will itself move to larger quarters. An addition is also proposed for an expanded beginning education suite. Proposed capacity for Braeburn will be 500 pupils.







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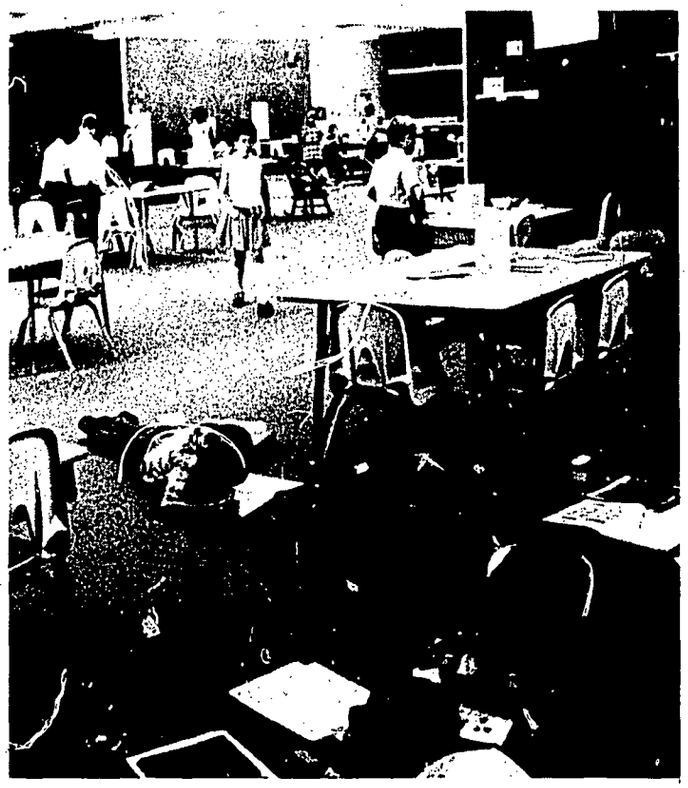
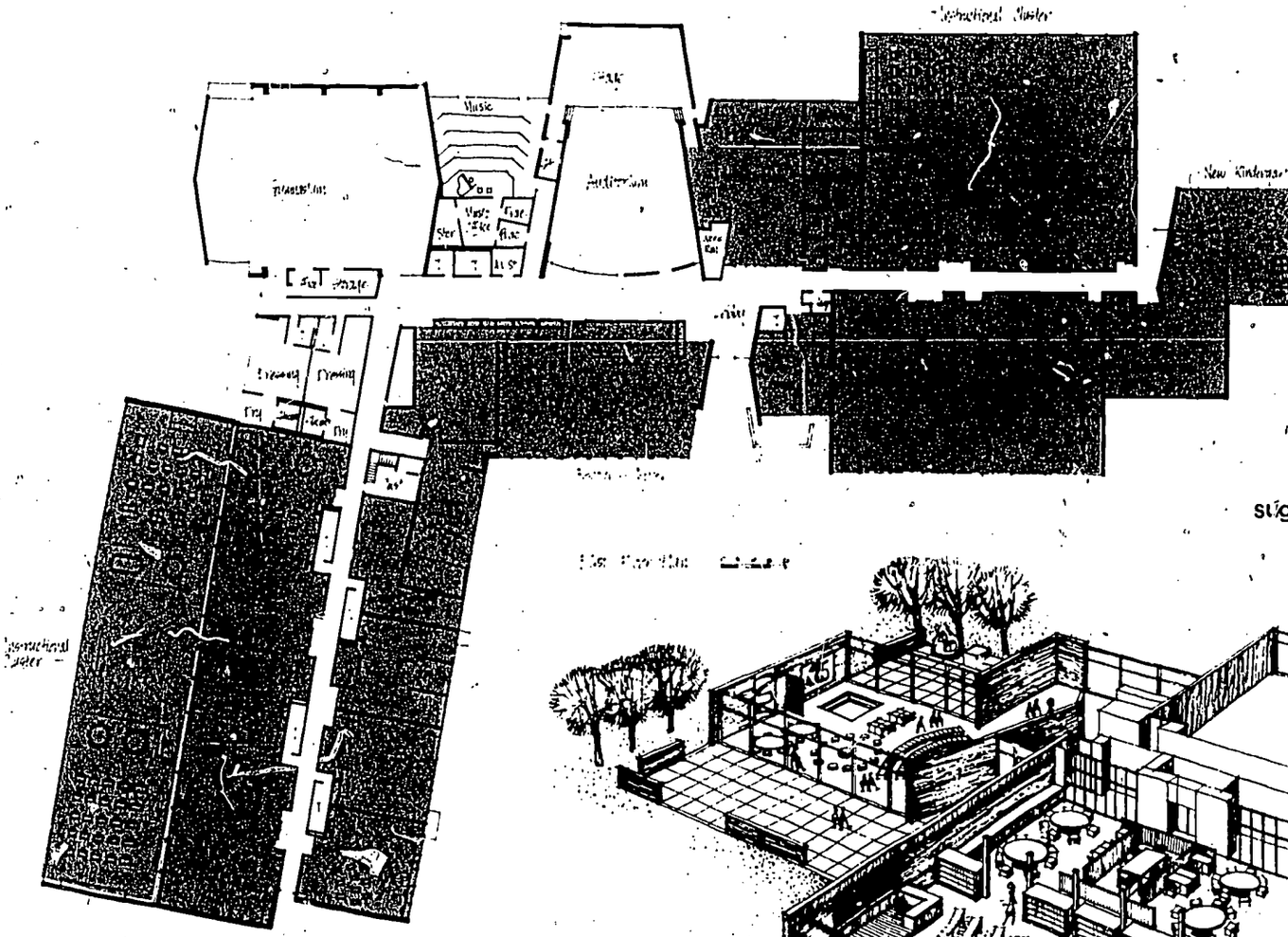
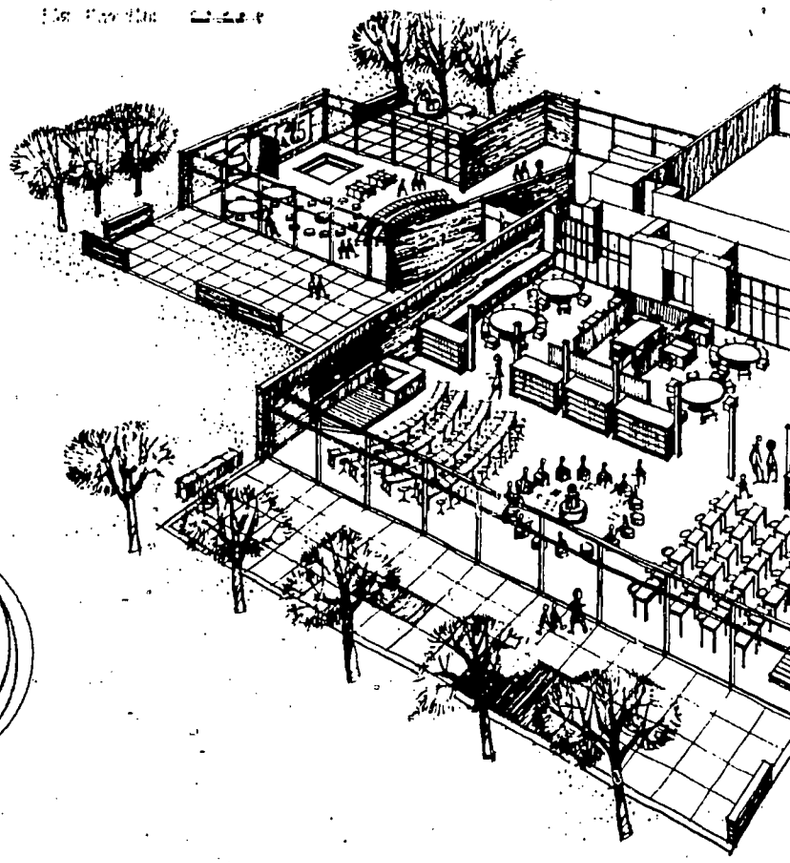
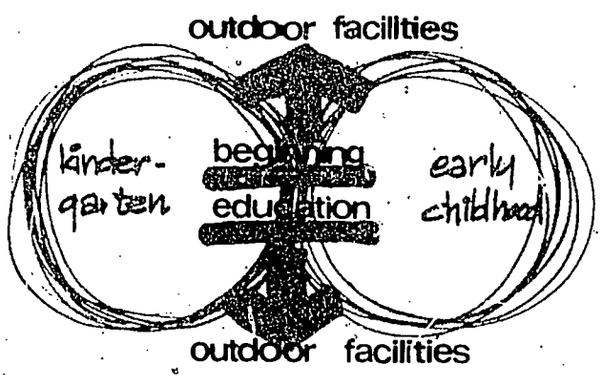
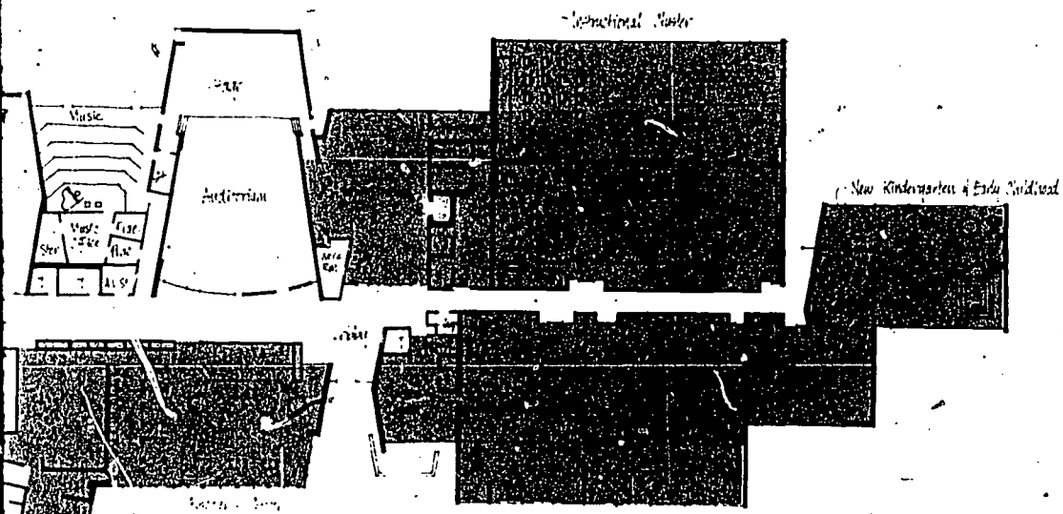
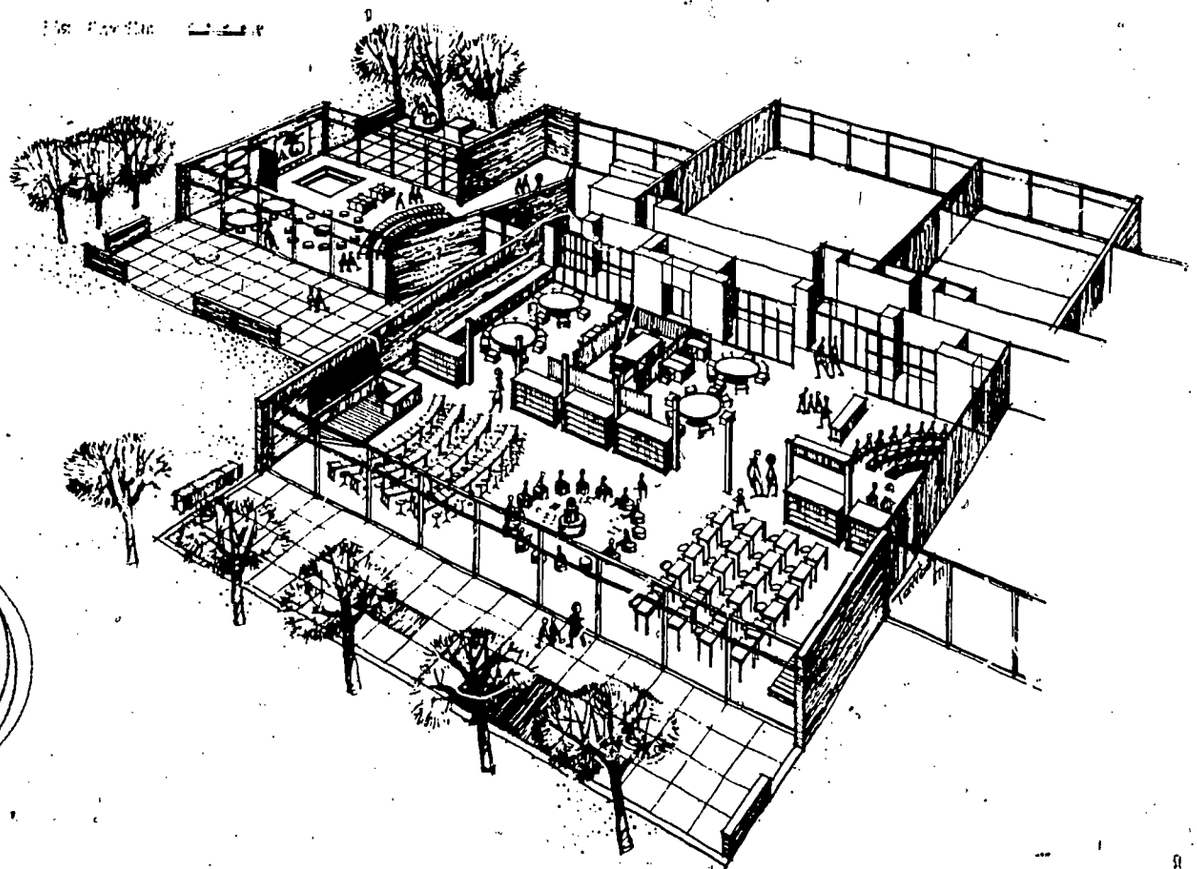



Music
Auditorium



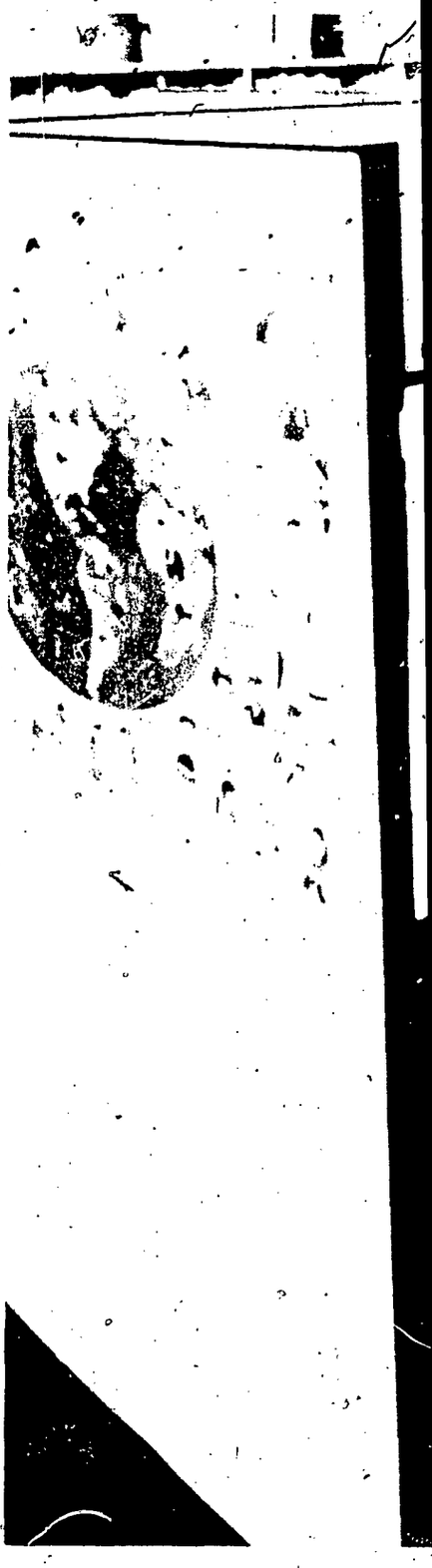

outdoor facilities
kinder-garten
beginning education
early childhood
outdoor facilities


Instructional Center
Music
Auditorium
New Kindergarten & Early Childhood
remodeled
addition
suggested



middle schools

As noted earlier, the recommended grade structure combines grades six, seven and eight in a middle school. The changed grouping for early adolescents - the in-betweens, as Dr. Engelhardt refers to them - is a recognition of the special needs and capabilities of boys and girls from 10 to 14 years old. The middle schools would depart from some of the least desirable features of present junior high schools, which often appear to be carbon copies of senior high schools. They should offer broader opportunities for an enriched and diversified curriculum without the departmental specialization of the senior highs. The four present junior high schools, King Philip, Alfred Plant, Sedgwick and Talcott will be reconstituted as middle schools each with a capacity of 750 students. All but King Philip will need substantial additions to provide the facilities for a full program.



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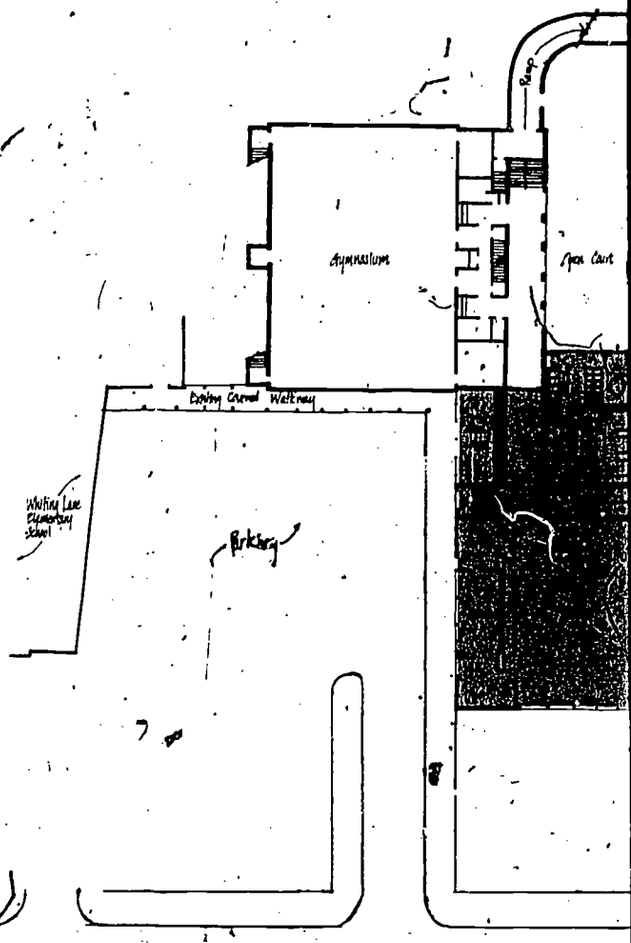
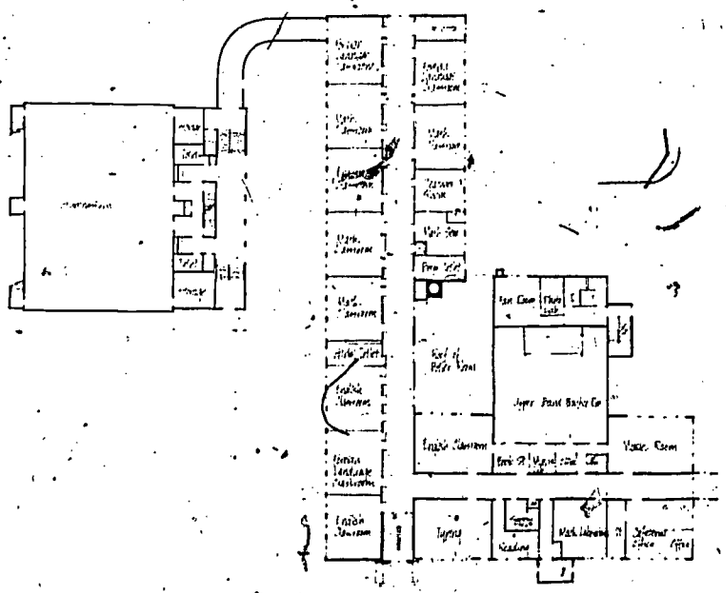
case study 3

alfred plant junior high school

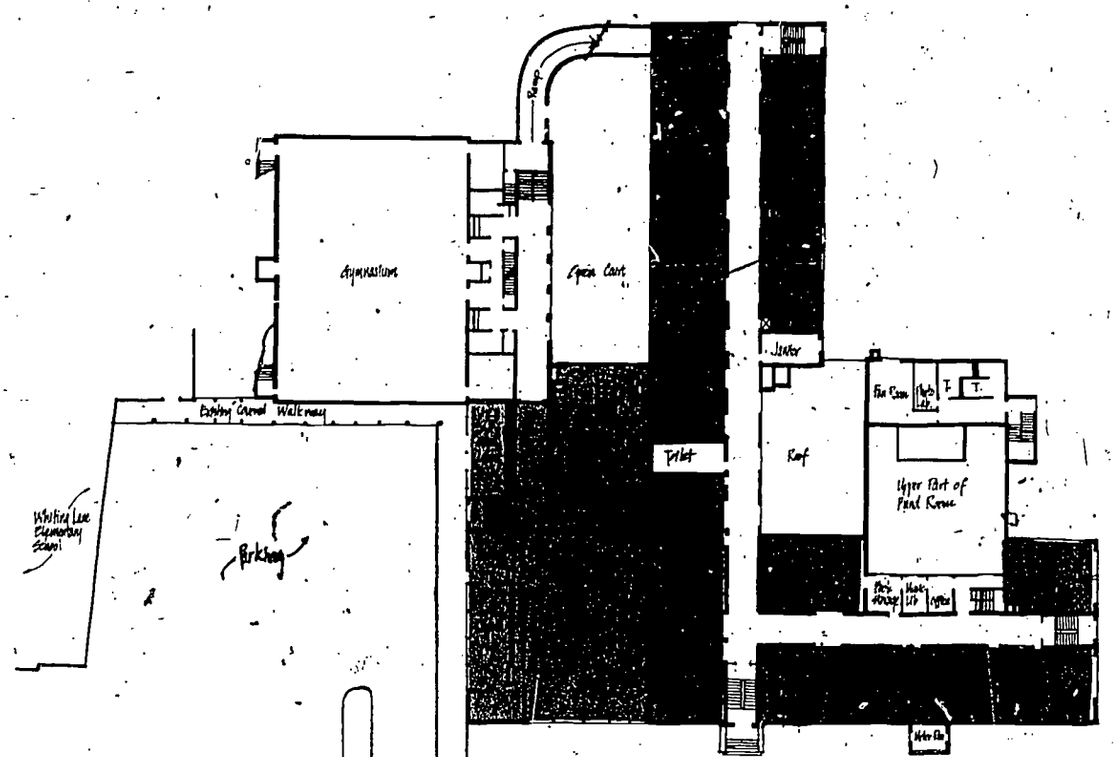
Dates of Construction and Additions:
1922, 1929, 1954
Site Size (shared with Whiting Lane Elementary School & Board of Education Offices) 12.2 acres





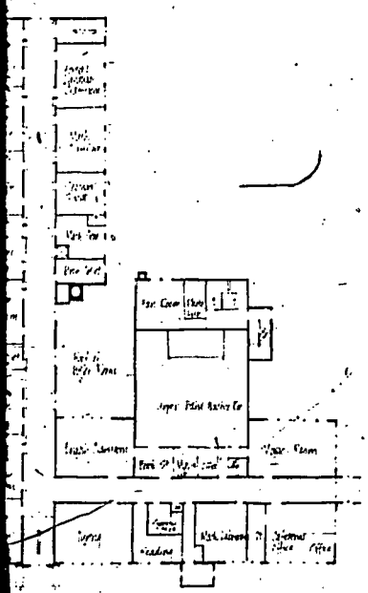
existing

This school now accommodates roughly the same number of students, 730, in grades seven, eight and nine, it will when it becomes a middle school serving grades six, seven and eight. On the surface, therefore, it might appear that little expansion would be necessary. But evaluation shows that in common with the other junior highs, there are inadequate provisions for a learning resource center, large group instruction, independent study, faculty work areas, and specialized facilities required for science and industrial arts. In addition, the circulation patterns at the school are long and inconvenient.



Ground Floor Plan

suggested

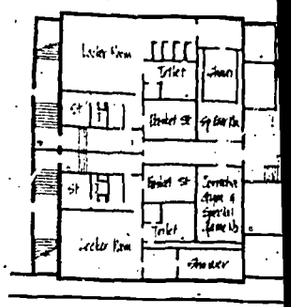


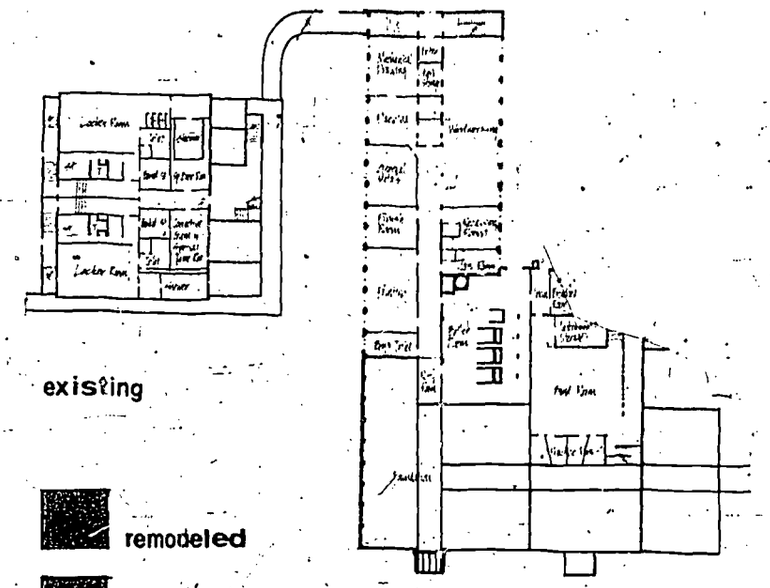
This school now accommodates roughly the same number of students, 730, in grades seven, eight and nine, it will when it becomes a middle school serving grades six, seven and eight. On the surface, therefore, it might appear that little expansion would be necessary. But evaluation shows that in common with the other junior highs, there are inadequate provisions for a learning resource center, large group instruction, independent study, faculty work areas, and specialized facilities required for science and industrial arts. In addition, the circulation patterns at the school are long and inconvenient.

remodeled

addition

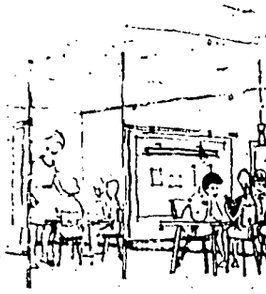
The solution proposes a three-storied addition linking the two ends of the building and providing a central core housing many of the facilities most glaringly inadequate. On the ground floor a new cafeteria would replace the inappropriately located one on the third floor, freeing that space for an open instructional cluster. The ground floor addition would have an expanded home arts suite. A large new learning resource and professional center would occupy most of the second floor addition, above which on the top floor would be a complete science center. Remaining areas of the school would be remodeled to provide on the one hand more flexible learning spaces and on the other those special facilities and equipment needed for a comprehensive program. In addition, it is recommended that the present ancient Board of Education building, which seriously crowds the site, be removed when new quarters are secured.





existing

suggested



remodeled

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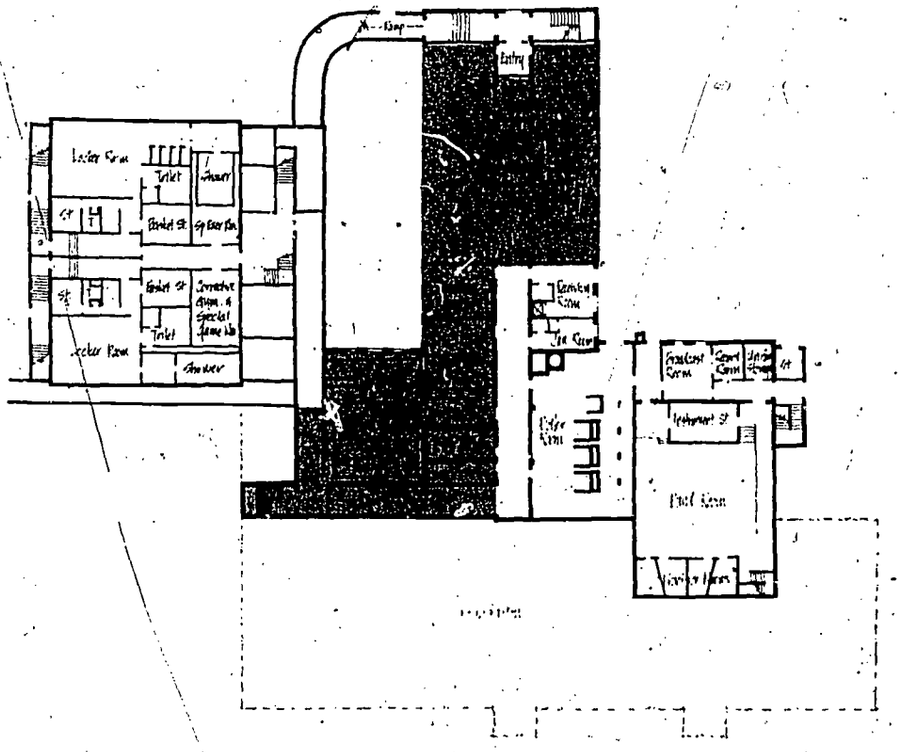
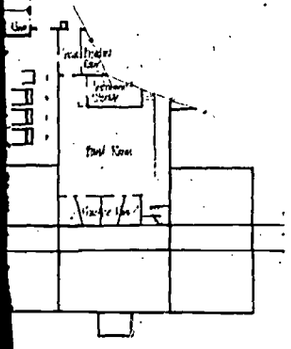


suggested



remodeled

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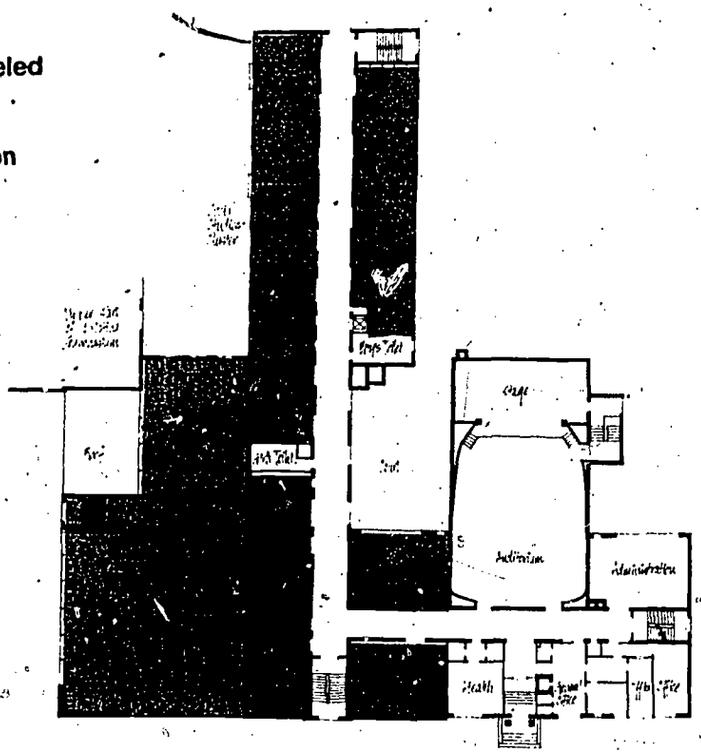
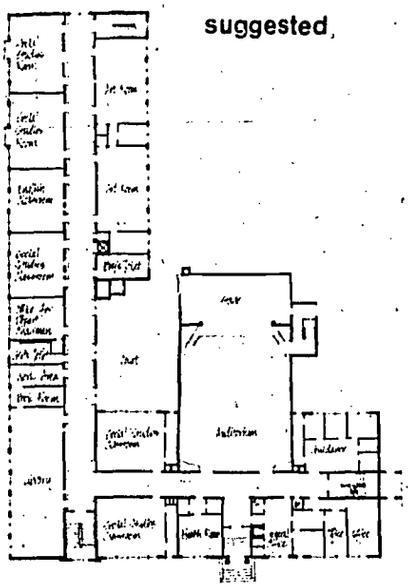


suggested

First Floor Plan



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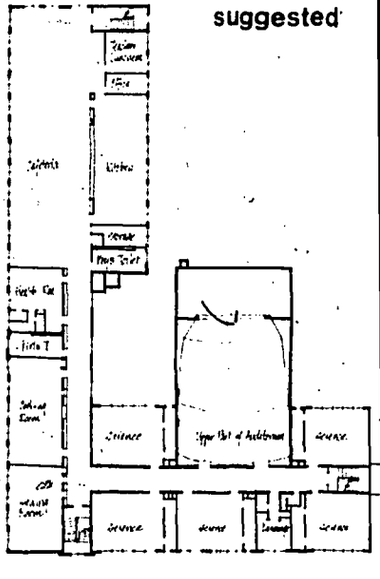
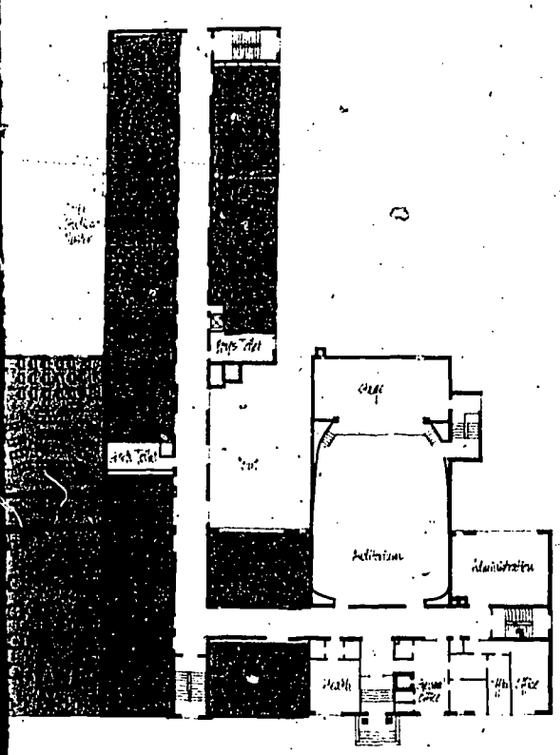
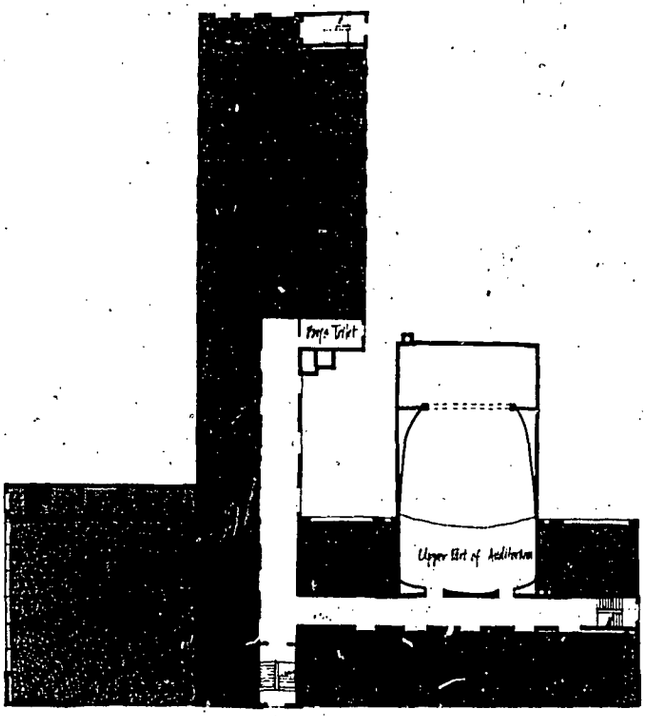


existing

Second Floor Plan

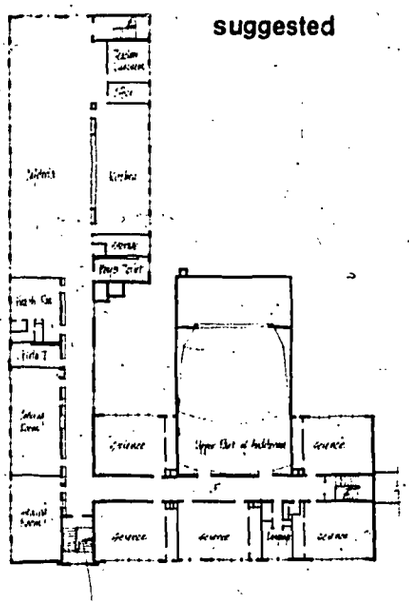


ed First Floor Plan



suggested Second Floor Plan

existing



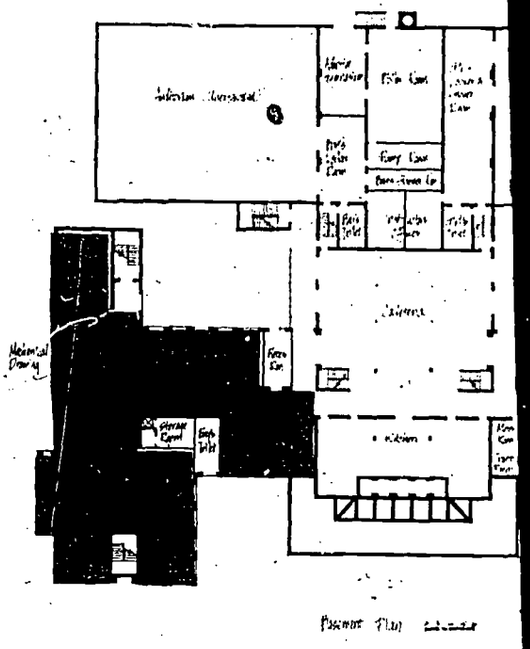
Second Floor Plan existing

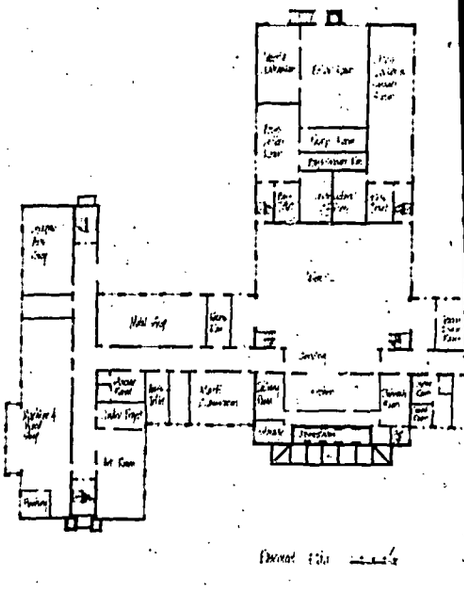
case study 4

william thompson sedgwick junior high school

Dates of Construction and Addition:
1951, 1957
Site Size: 16.4 acres

Sedgwick suffers the same deficiencies as Plant Junior High, except for the fact that the plan is less strung out. To bring it up to meet the requirements of a middle school enrollment of 750 will require substantial additions. A typical complication in this older school, is the fact that class spaces are distributed on three levels in a building of bearing wall construction, a condition that mitigates against a completely flexible rearrangement of space. Nevertheless the geometry and size of this school suggested a house plan arrangement (shown at each end of the symmetrical plan). The inadequate auditorium and gymnasium are proposed to be replaced by new additions. This would allow the auditorium and its balcony to become, respectively, a fully equipped learning resources center and a faculty professional center. The existing gymnasium would be turned into a music and arts complex.





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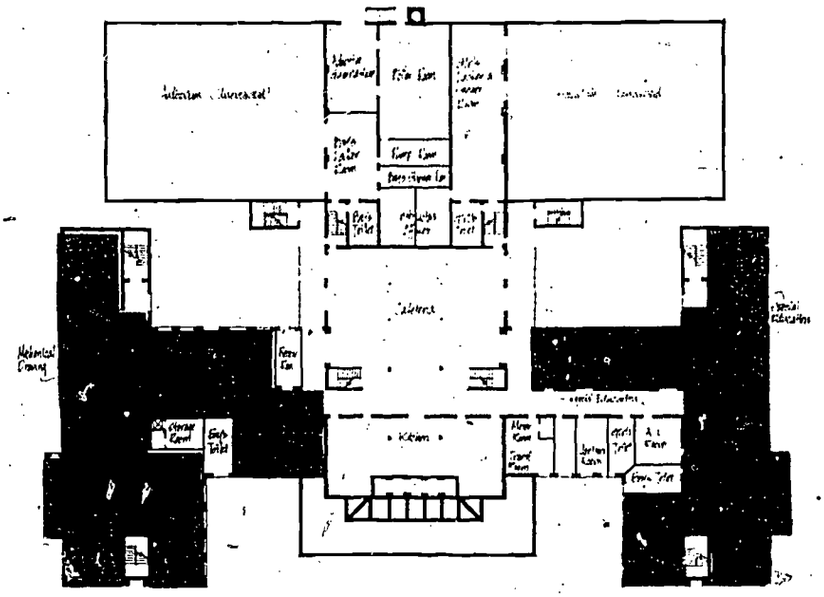

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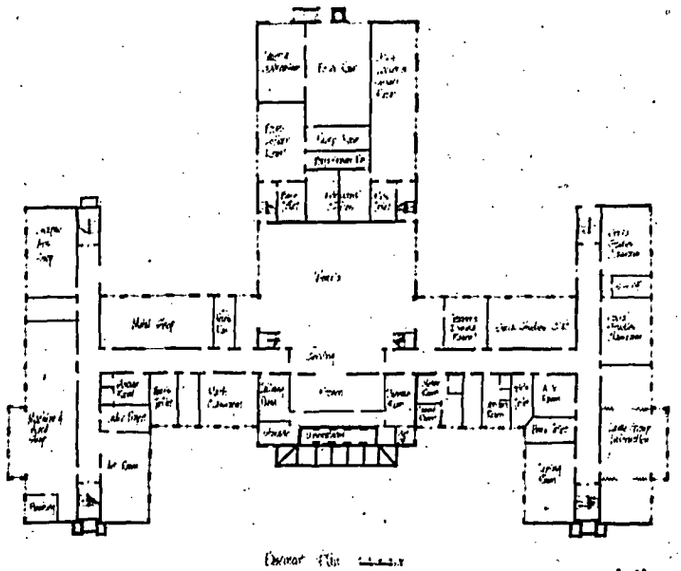

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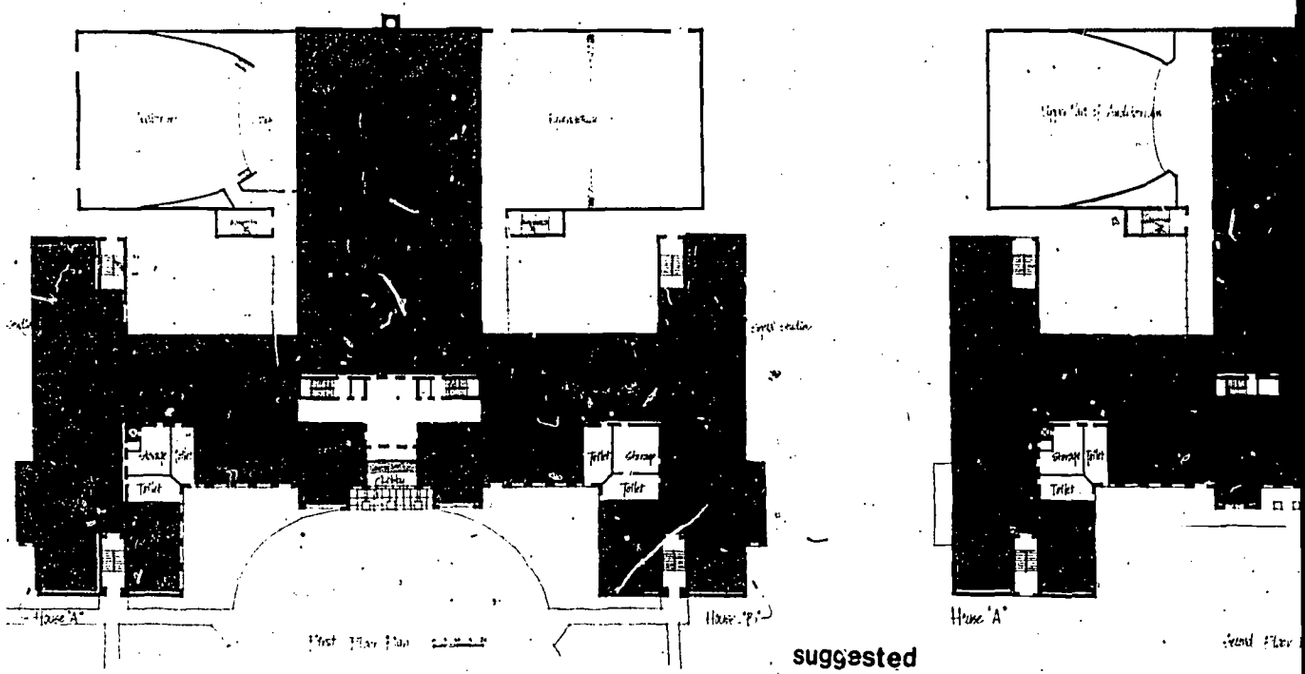

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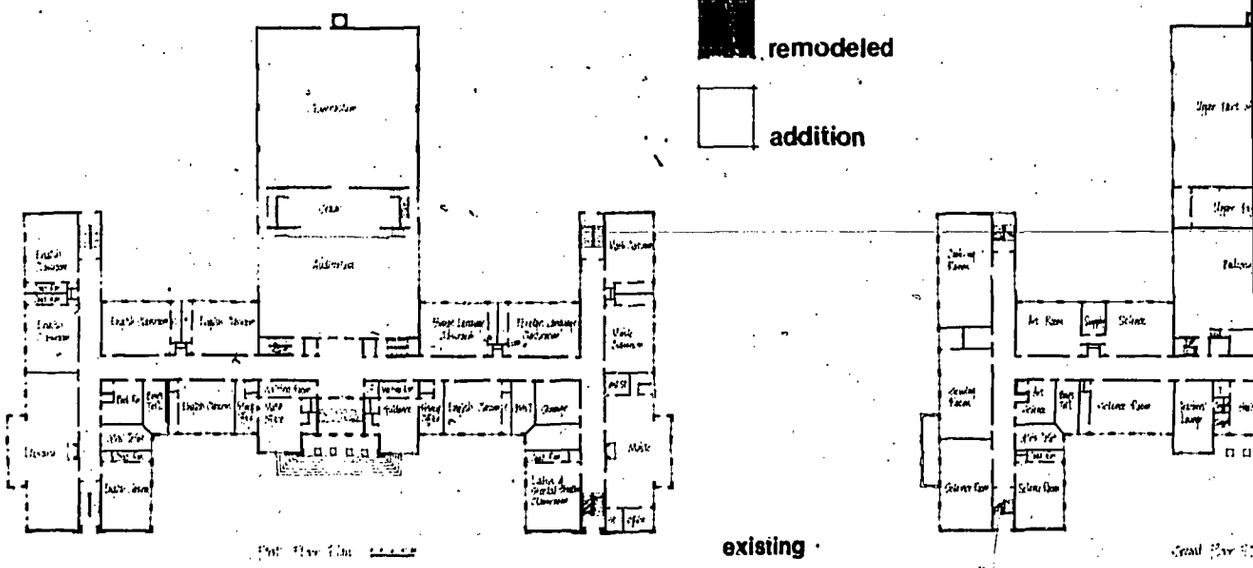

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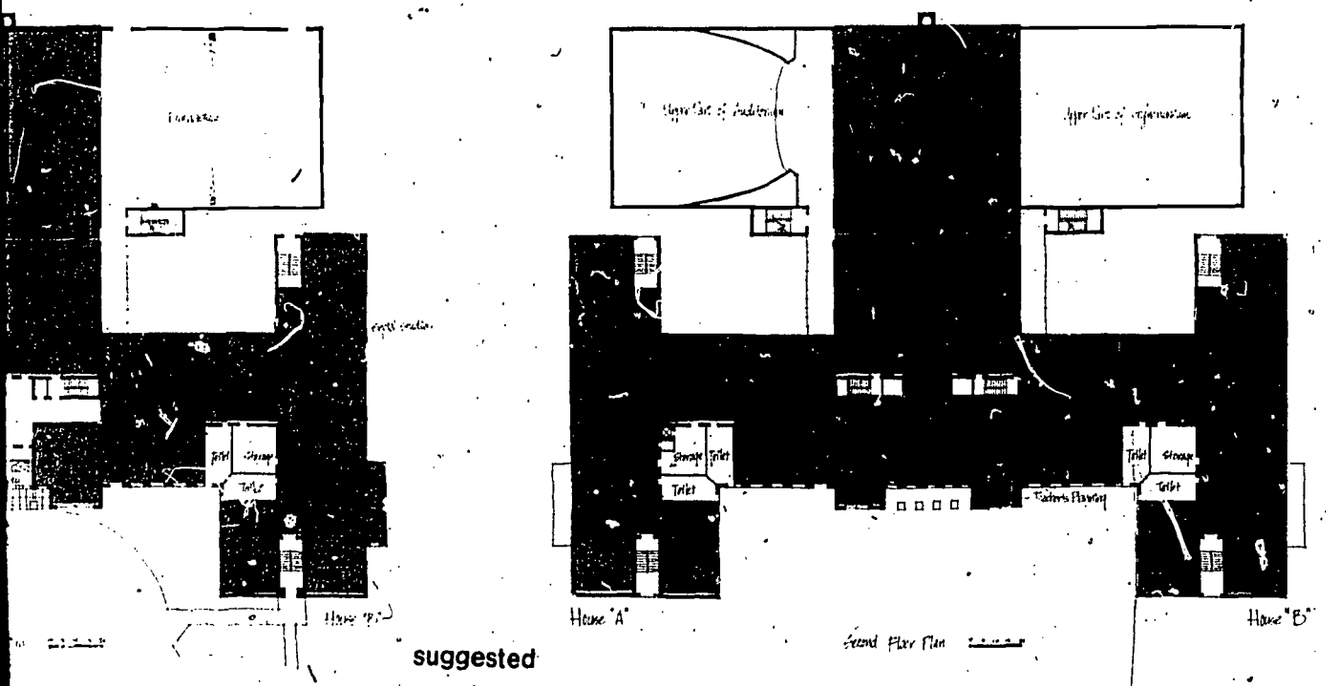

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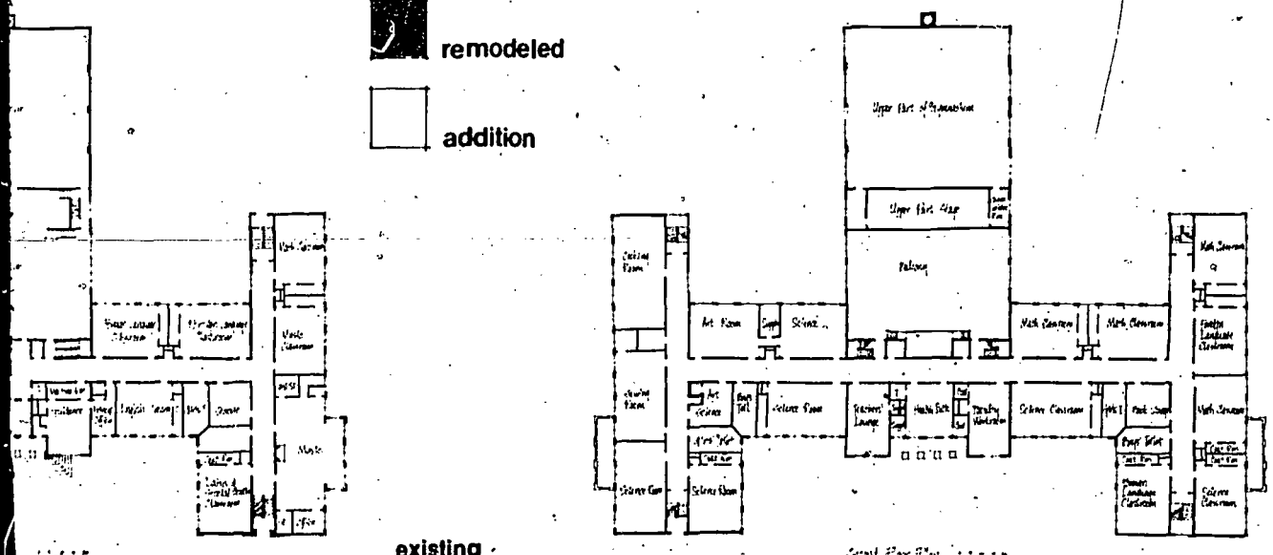

existing

high schools

One of the most potent arguments for the reorganization of the grade structure is the ability of the four-year high school to provide a strong comprehensive program geared to a continuous progress system. There are two high schools in West Hartford: Frederick U Conard built in 1957 and the new William H. Hall completed in the fall of 1970. The total nominal capacity for both schools under present scheduling would be between 3,400 and 3,500. The Engelhardt report projected that the enrollment for the years 1974-75 for a four-year program would be 4,200.

It would appear that major additions would be needed to accommodate this increase in enrollment. The school administration, however, is committed to the concept of greater utilization of school facilities. The use of a high school for more hours per day and more weeks per year can substantially increase its efficiency. Even though each student may not spend more hours in school, individualized staggered programs, independent study and the use of facilities available in the community can dramatically increase the nominal capacity of a school building.

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With this in mind the consultants have not developed designs for expanding either high school. In order to provide those facilities considered deficient in the Engelhardt report, notably spaces for individual study and an expanded resource center, suggested plans are included for a remodeled Conard High School.

case study 5

frederick u. conard high school

Date of Construction: 1957
Site Size: 43 acres

Conard is a well designed, comprehensive school, maintained in fine condition. Like all overcrowded schools undergoing changes in curriculum, there are naturally some constraints on flexibility. Certain departments report crowded classes due to inadequate spaces, others seem to have abundant room for present programming. Some of these inequities

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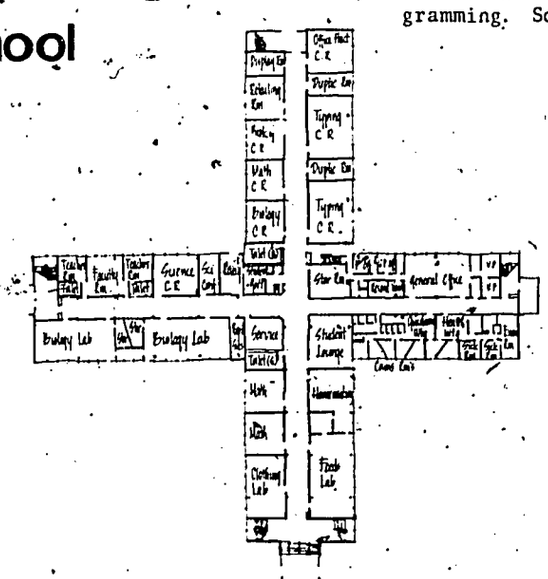
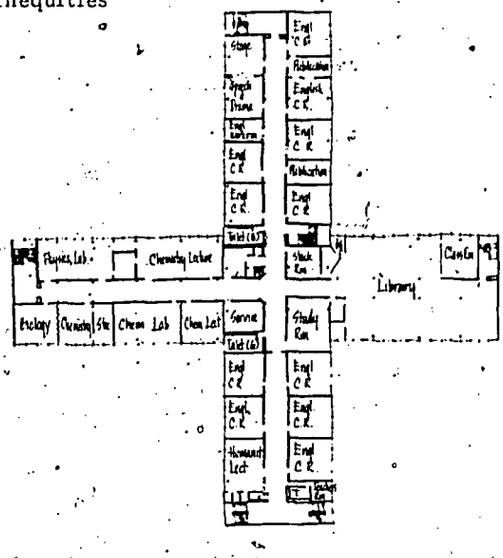
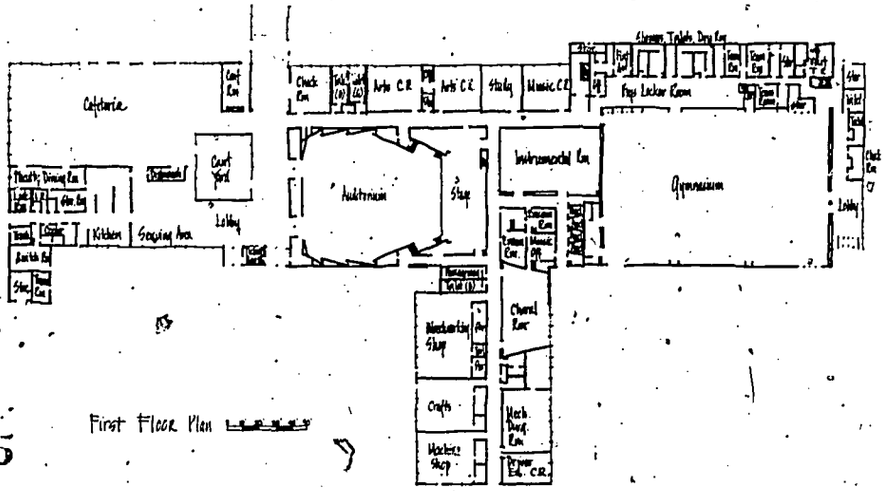




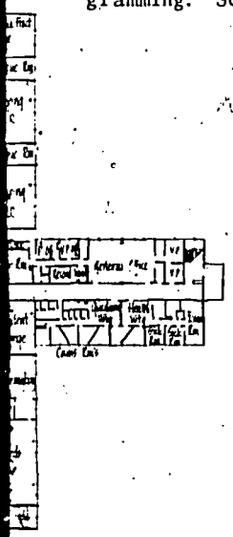
Second Floor Plan

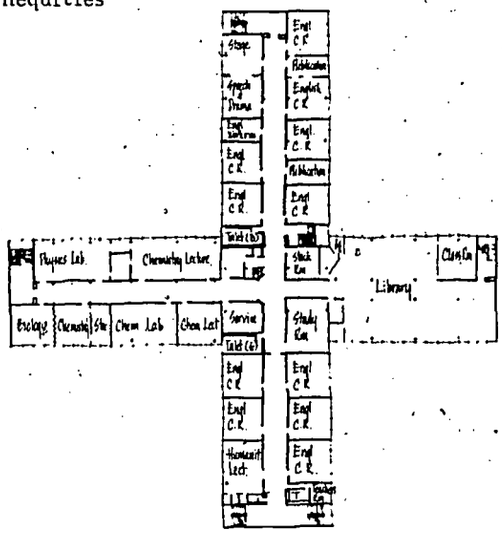


First Floor Plan

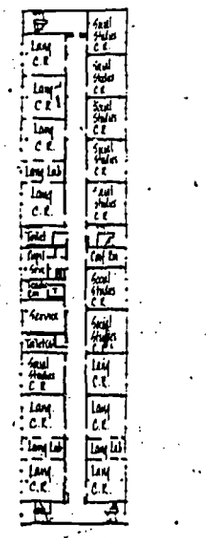
Date of Construction: 1957
Site Size: 43 acres

Conard is a well designed, comprehensive school maintained in fine condition. Like all overcrowded schools undergoing changes in curricuium, there are naturally some constraints on flexibility. Certain departments report crowded classes due to inadequate spaces, others seem to have abundant room for present programming. Some of these inequities can be corrected by organizational and scheduling changes and by fairly minor remodeling to create more flexible instructional areas. The major deficiencies noted by the Engelhardt report, however, center around an inadequate learning resource center plus the lack of professional work space for faculty and places for independent study. The suggested solution illustrated here addresses itself to these problems.

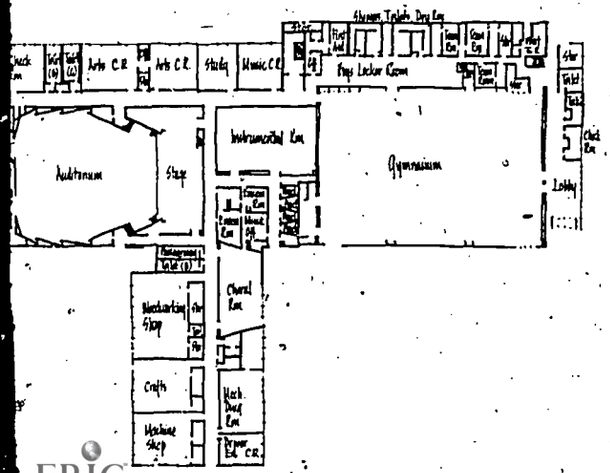


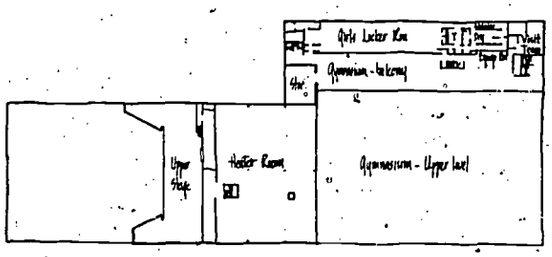


Second Floor Plan

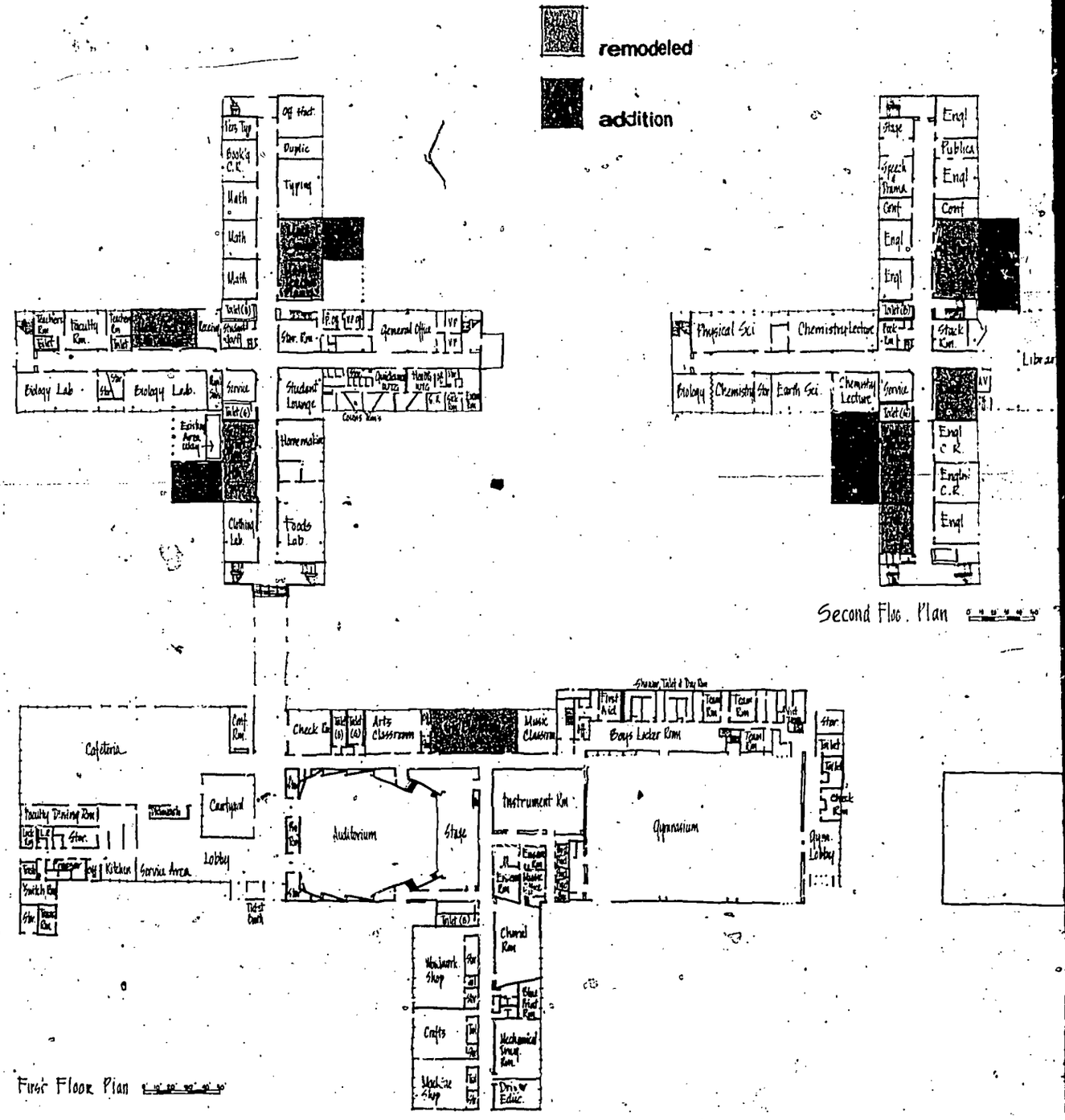


Third Floor Plan





Second Floor Plan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Off. Mach.
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Math
Math
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Teachers Rm.
Faculty Rm.
Toilet (b)
Gen. Office
Biology Lab.
Biology Lab.
Service
Toilet (b)
Student Lounge
Courses Rm's
Existing Area. Utility
Homemaking
Clothing Lab.
Foods Lab.
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Engl.
Stage
Speech & Drama
Publica.
Engl.
Conf.
Engl.
Engl.
Toilet (b)
Stack Rm.
Physical Sci
Chemistry Lecture
Biology
Chemistry
Earth Sci.
Chemistry Lecture
Service
Toilet (b)
Engl. C.R.
English C.R.
Engl.
Cafeteria
Cont. Rm.
Faculty Dining Rm.
Courtyard
Lobby
Service Area
Kitchen
Check Rm.
Toilet (b)
Toilet (b)
Arts Classroom
Music Classrm.
Auditorium
Stage
Instrument Rm.
Gymnasium
Shower, Toilet & Dry Rm.
First Aid
Team Rm.
Team Rm.
Toilet (b)
Boys Locker Rm.
Toilet (b)
Stor.
Toilet
Toilet
Check Rm.
Gym. Lobby
Choral Rm.
Woodwork Shop
Crafts
Machine Shop
Mechanical Drawing Rm.
Drivers Educ.
First Floor Plan

remodeled

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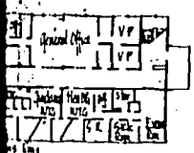
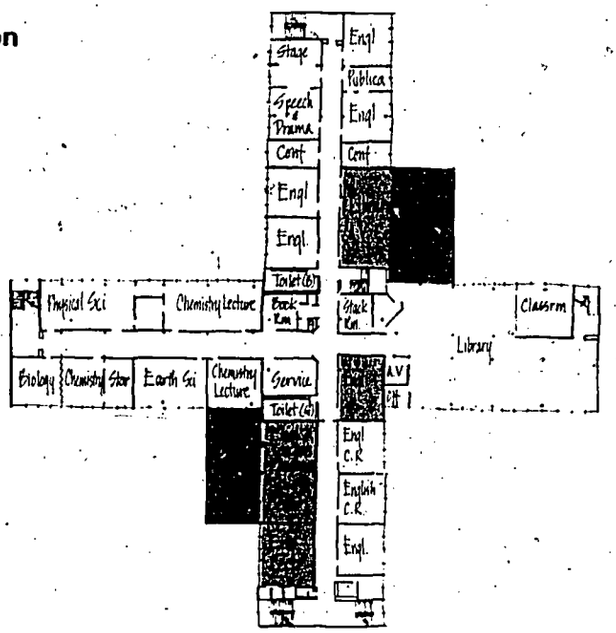
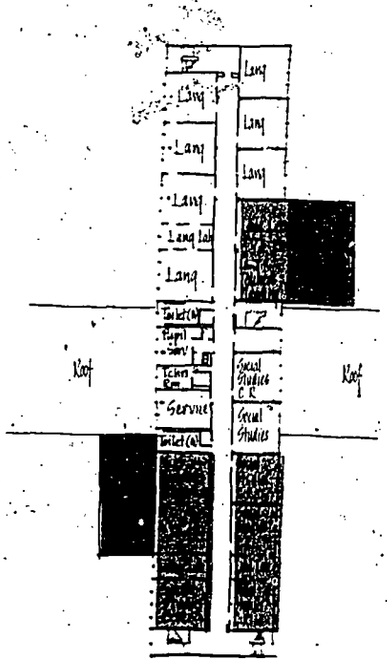
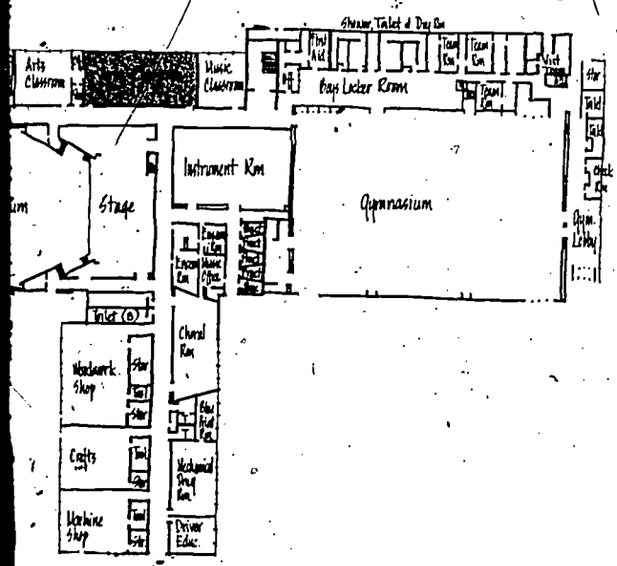


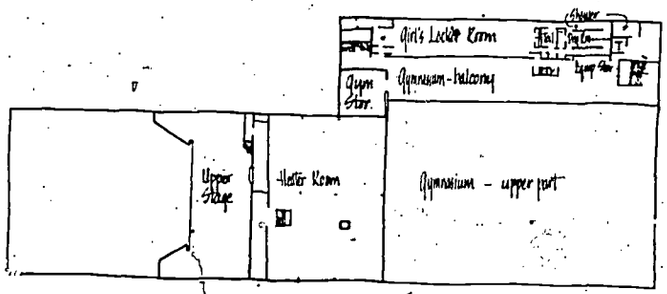


Second Floor Plan



Third Floor Plan





Second Floor Plan

suggested

budget cost estimates

The budget cost figures outlined herein include the costs of construction, minimum site work, built-in equipment, and professional fees. Furniture and loose instructional equipment costs are not included, since many of these items are already at hand in the existing schools and others are being routinely purchased or replaced under current budgets. No impression should be gained that by adopting the proposed construction program and ultimate status will be reached that will solve all the physical plant problems of the school system. Nothing stays static; demands for facilities to provide new or expanded educational programs and to update aging schools will have to be faced in the future as it has in the past.

The schematic proposals and budget estimates nevertheless provide what we believe is a realistic approach in seeking ways of renewing West Hartford's schools to meet today's educational demands.

ELEMENTARY SCHOOLS	[illegible]
Aiken	245
Braeburn	500
Bridlepath	270
Bugbee	500
Charter Oak	390
Duffy	445 (incl.
Elmwood	390
King Philip	400
Morley	300
Norfeldt	400
Smith	390
Webster Hill	500
Whiting Lane	440
Wolcott	650
	5820
[illegible]	
King Philip	750
Plant	750
Sedgwick	750
Talcott	750
	3000
[illegible]	
Conard	2000
Hall	2000
	4000
[illegible]	

ELEM. ENTARY SCHOOLS	[illegible] POSITIONS	[illegible] COST
Aiken	245	$ 200,000
Braeburn	500	620,000
Bridlepath	270	200,000
Bugbee	500	700,000
Charter Oak	390	545,000
Duffy	445 (incl. 70 sp.ed.)	500,000
Elmwood	390	545,000
King Philip	400	700,000
Morley	300	500,000
Norfeldt	400	300,000
Smith	390	450,000
Webster Hill	500	700,000
Whiting Lane	440	650,000
Wolcott	650	750,000
	5820	$7,360,000
[illegible] SCHOOLS		
King Philip	750	$ 840,000
Plant	750	1,800,000
Sedgwick	750	1,850,000
Talcott	750	1,000,000
	3000	$5,490,000
HIGH SCHOOL		
Conard	2000	$ 850,000
Hall	2000	-
	4000	$ 850,000
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BREAKDOWN OF BUDGET COSTS ALLOCATED BY FUNCTION - WEST HARTFORD SCHOOL RENEWAL

	Academic Instructional Areas		Pre-Kindergarten		Kindergarten		Remodeled Central		Special Ed. Media & Other		Su
	New	Remodeled	New	Remodeled	New	Remodeled	New	Remodeled	New	Remodeled	New
Elem.	1,095,012	2,143,143	104,837	335,242	79,913	378,288	708,668	694,244	160,144	715,714	2,087,
Jr.	695,051	1,205,276	-	-	-	-	304,996	174,235	1,503,257	891,097	2,503,
Sr.	413,913	208,326	-	-	-	-	-	116,891	-	-	413,
Total	2,203,976	3,556,745	104,837	335,242	79,913	378,288	1,013,664	985,370	1,663,401	1,606,811	5,004,
Total %	534,572	1,090,957	120,340	387,528	91,900	435,031	1,165,714	1,133,176	1,912,912	1,847,833	5,755,

* Includes built-in inflation factor for 1972 bidding

** 15% made up as follows:

Arch. Fees	8%	Average
Landscaping	½%	
Other Expenses	½%	
Additional inflation beyond '72	6%	
	15%	

*** Existing space that would be renovated regardless of its use

BREAKDOWN OF BUDGET COSTS ALLOCATED BY FUNCTION - WEST HARTFORD SCHOOL RENEWAL

Pre-Kindergarten		Kindergarten		Resource Centers		Special Arts & Music & Other		Sub-Total		Total	Total Other Costs
New	Remodeled	New	Remodeled	New	Remodeled	New	Remodeled	New	Remodeled	Construction	(15% ** Added)
104,837	335,242	79,913	378,288	708,668	694,244	160,144	715,714	2,087,652	4,312,348	6,400,000*	7,360,000
-	-	-	-	304,996	174,235	1,503,257	891,097	2,503,304	2,270,606	4,773,912*	5,490,000
-	-	-	-	-	116,891	-	-	413,913	325,217	739,130*	850,000
104,837	335,242	79,913	378,288	1013,664	985,370	1,663,401	1,606,811	5,004,869	6,908	11,913,042	13,700,000
120,560	385,528***	91,900	435,031	1165,714	1133,176	1,912,912	1,847,833	5755,600	7,944,100	13,700,000	

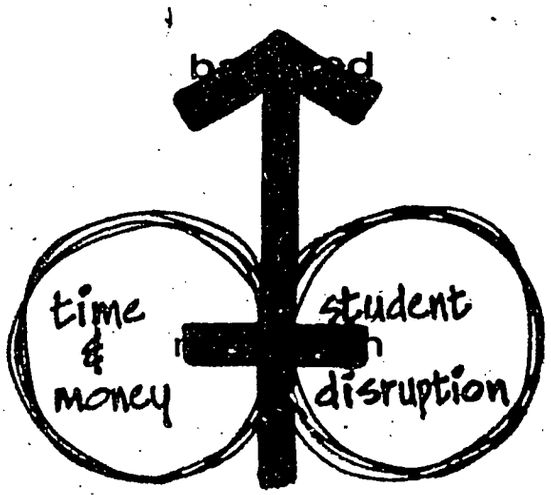
r 1972 bidding

	8%	Average
	½%	
	½%	
ond '72	6%	
	15%	

ted regardless of its use

time schedule for implementation

Many variables are involved in attempting to set forth a schedule for implementing the construction program outlined in this report. The approach taken in the following timetable outlines one possible set of steps that might be taken to permit this program to be effected over the next few years. Obviously, there are other ways by which the desired result can be accomplished, and all of the alternatives will need to be explored and evaluated on the basis of factors other than construction. Nevertheless, it is apparent that Whitman and Beach Park Elementary schools and Old Hall High should be retained for school purposes until the building program can be completed in order to minimize the serious dislocation of children.



OPTION I. UTILIZING OLD HALL HIGH

ASSUMPTIONS

1. By extending the length of the day at the high schools and by using community facilities, 1,000 9th grade students can be moved into New Hall and Conard without the immediate need of expansion.
2. All existing schools including Old Hall High, Beach Park and Whitman Elementary Schools will be utilized until the entire program is completed.
3. Early childhood education will not be instituted immediately in all schools to allow for flexibility of scheduling spaces to minimize disruptions. Pilot programs could be started in some schools and other nonschool places.

Phases

FIRST YEAR

a. Move all 9th graders into New Hall and Conard to start four-year high schools.
b. Move reduced enrollment of King Philip and Talcott (approx. 1,000 students) into Old Hall. (These are grades 7 & 8).
c. Move 6th graders from Beach Park, Morley, Smith & Whiting Lane into Plant Junior High.
d. Move students of K-5 at Smith and Whiting Lane (80 total) into places at Beach Park & Morley. This substantially reduces the remaining enrollment at Smith & Whiting Lane and makes it possible to:
e. Completely remodel Smith & Whiting Lane.
f. Similarly move 6th graders from Braeburn, Bridlepath, Bugbee & Duffy into Sedgwick Junior High.

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e. Completely remodel Smith & Whiting Lane.
f. Similarly move 6th graders from Braeburn, Bridlepath, Bugbee & Duffy into Sedgwick Junior High.
g. Move about 100 students of K-5 at Braeburn & Bridlepath into Duffy.
h. Completely remodel Braeburn, Bridlepath & Bugbee.
i. Completely remodel Talcott and King Philip junior highs as middle schools.
j. Move King Philip elementary students into King Philip Middle School after remodeling and complete remodeling of King Philip Elementary.

SECOND YEAR

a. Move Sedgwick to Old Hall (Old Hall will have excess capacity thus it is possible to absorb additional lower graders).
b. Move 6th graders from Aiken, Norfeldt and King Philip Elementary into King Philip Middle School.
c. Move 6th graders from Charter Oak, Elmwood, Webster Hill and Wolcott into Talcott.
d. Completely remodel Sedgwick.
e. Redistribute students from the above named schools into those already completed (early childhood spaces could be used; some curtailment on the use of new resource centers, etc., could be made for one year).
f. Move entire Charter Oak into Old Hall.
g. Move students into Beach Park and Whitman up to maximum present capacity.
h. Remodel Aiken, Charter Oak, Norfeldt, Webster Hill & Wolcott.

THIRD YEAR

a. Move Plant into Old Hall and completely remodel Plant.
b. Occupy early childhood spaces in remodeled schools and Whitman by redistricting. Evacuate Morley.
c. Move Elmwood to Old Hall.
d. Remodel Duffy, Elmwood & Morley.
e. Conard can be remodeled in second or third year.

FOURTH YEAR

a. All schools on pre-school-5 6-8, 9-12 basis.
b. Old Hall, Beach Park, Whitman may be used for other school administration or town purposes.

SCHOOLS \ YEARS	YEAR I	YEAR
HIGH SCHOOLS		
Conard	9 - 12	9 - 1
New Hall	9 - 12	9 - 1
Old Hall	OCCUPIED	OCCUP
JUNIOR HIGH SCHOOLS		
King Philip	7 - 8	6 - 8
Plant	6 - 8	6 - 8
Sedgwick	6 - 8	6 - 8
Talcott	7 - 8	6 - 8
ELEMENTARY SCHOOLS		
Aiken	K - 6	K - 5
Beach Park	K - 5	K - 5
Braeburn	K - 5	K - 5
Bridlepath	K - 5	K - 5
Bugbee	K - 5	K - 5
Charter Oak	K - 6	K - 5
Duffy	K - 5	K - 5
Elmwood	K - 6	K - 5
King Philip	K - 5	K - 5
Morley	K - 5	K - 5
Norfeldt	K - 6	K - 5
Smith	K - 5	K - 5
Webster Hill	K - 6	K - 5
Whiting Lane	K - 5	K - 5
Whitman	K - 6	K - 5
Wolcott	K - 6	K - 5

SCHOOLS \ YEARS	YEAR I	YEAR II	YEAR III	YEAR IV
HIGH SCHOOLS				
Conard	9 - 12	9 - 12	[illegible]	9 - 12
New Hall	9 - 12	9 - 12	9 - 12	9 - 12
Old Hall	OCCUPIED	OCCUPIED	OCCUPIED	ABANDON
JUNIOR HIGH SCHOOLS				
King Philip	[illegible]	6 - 8	6 - 8	6 - 8
Plant	6 - 8	6 - 8	[illegible]	6 - 8
Sedgwick	6 - 8	[illegible]	6 - 8	6 - 8
Talcott	[illegible]	6 - 8	6 - 8	6 - 8
ELEMENTARY SCHOOLS				
Aiken	K - 6	[illegible]	K - 5	PRESCHOOL-5
Beach Park	K - 5	K - 5	K - 5	ABANDON
Braeburn	[illegible]	K - 5	K - 5	PRESCHOOL-5
Bridlepath	[illegible]	K - 5	K - 5	PRESCHOOL-5
Bugbee	[illegible]	K - 5	K - 5	PRESCHOOL-5
Charter Oak	K - 6	[illegible]	K - 5	PRESCHOOL-5
Duffy	K - 5	K - 5	[illegible]	PRESCHOOL-5
Elmwood	K - 6	K - 5	[illegible]	PRESCHOOL-5
King Philip	[illegible]	K - 5	K - 5	PRESCHOOL-5
Morley	K - 5	K - 5	[illegible]	PRESCHOOL-5
Norfeldt	K - 6	[illegible]	K - 5	PRESCHOOL-5
Smith	[illegible]	K - 5	K - 5	PRESCHOOL-5
Webster Hill	K - 6	[illegible]	K - 5	PRESCHOOL-5
Whiting Lane	[illegible]	K - 5	K - 5	PRESCHOOL-5
Whitman	K - 6	K - 5	K - 5	ABANDON
Wolcott	K - 6	[illegible]	K - 5	PRESCHOOL-5

OPTION II. NOT INCLUDING USE OF OLD HALL HIGH.

FIRST YEAR

Elementary Schools

Smith - No vacating necessary during upgrading alterations.
Bugbee - Must be partially vacated for one year. Hence, one-half of the students would be housed at King Philip while upgrading is in progress.
Braeburn - Must be vacated for one year. Half of the students would attend Webster Hill and half would attend Wolcott.
Aiken - No vacating necessary during the upgrading process.
Bridlepath - No vacating necessary during upgrading alterations.

Secondary Schools

Mid-Year - Upgrading begins at Conard.
Late Mid-Year - All ninth grade students would be moved from the Junior high schools to Conard and Hall.
Plant - Must be vacated during upgrading alterations. Using spaces vacated by the ninth grade in their move to the high schools, the seventh grade could be housed at Sedgwick and the eighth grade students at King Philip.
Talcott - Needs only partial vacating. With the ninth graders already moved to the high schools, Talcott could be upgraded with the seventh and eighth graders remaining at the school.

SECOND YEAR

Elementary Schools

Webster Hill - Does not need to be vacant during upgrading.
Whiting Lane - Must be partially vacated during upgrading alterations. One-half of the students would be housed at King Philip.
Elmwood - Must be partially vacated during upgrading. One-half of the students would be housed at Wolcott.
Charter Oak - Must be partially vacated. One-half of the students would be housed at Smith.
Norfeldt - Must be partially vacated. One-half of the students would be housed at Aiken.

Secondary Schools

Sedgwick - Must be vacated during upgrading alterations. Plant, having been upgraded during the previous year, can house the seventh graders and Talcott the eighth graders.
King Philip - Needs only partial vacating during upgrading alterations and, since the ninth graders will have been moved to the high school, the building can be upgraded with the seventh and eighth graders present.

THIRD YEAR

Sixth graders will b
schools.

Distribution of Stud
Projected for

Beach Park

Whitman

HALL HIGH

SECOND YEAR

Elementary Schools

Webster Hill - Does not need to be vacant during upgrading.
Whiting Lane - Must be partially vacated during upgrading alterations. One-half of the students would be housed at King Philip.
Elmwood - Must be partially vacated during upgrading. One-half of the students would be housed at Wolcott.
Charter Oak - Must be partially vacated. One-half of the students would be housed at Smith.
Norfeldt - Must be partially vacated. One-half of the students would be housed at Aiken.

Secondary Schools

Sedgwick - Must be vacated during upgrading alterations. Plant, having been upgraded during the previous year, can house the seventh graders and Talcott the eighth graders.
King Philip - Needs only partial vacating during upgrading alterations and, since the ninth graders will have been moved to the high school, the building can be upgraded with the seventh and eighth graders present.

THIRD YEAR

Sixth graders will be moved to middle schools.

Distribution of Students from Schools Projected for Closing

		Third Year	K-5
Beach Park		King Philip	56
		Whiting Lane	50
			106
Whitman		Braeburn	154
		Duffy	54
		Whiting Lane	25
			233

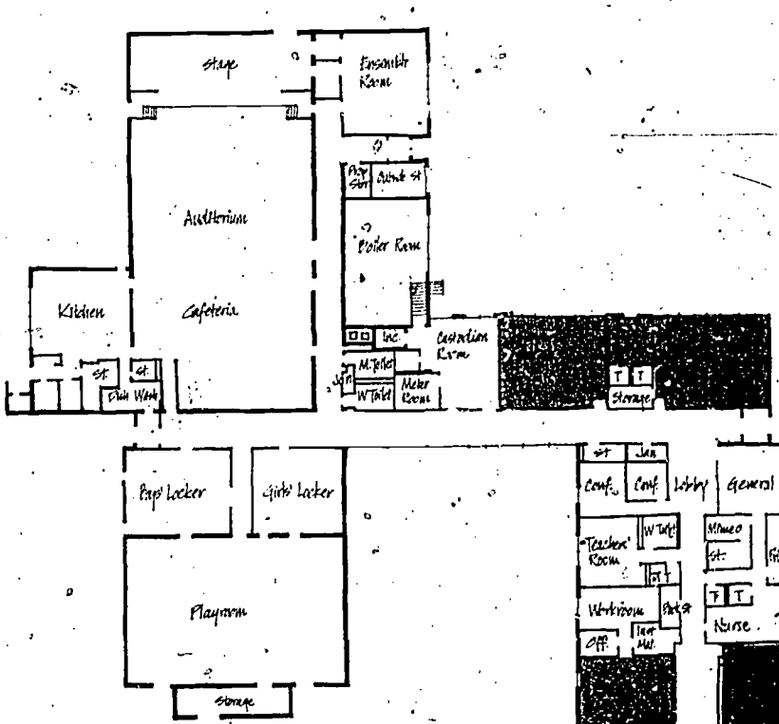
portfolio of plans

elementary schools

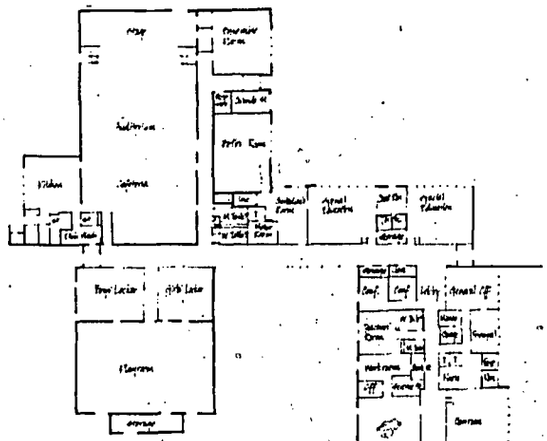
mary louise aiken
braeburn
bridlepath
lloyd h. bugbee
charter oak & elmwood
louise duffy
king philip
edward morley
eric g. norfeldt
florence e. smith
webster hill
whiting lane
henry a. wolcott

mary louise aiken elementary school

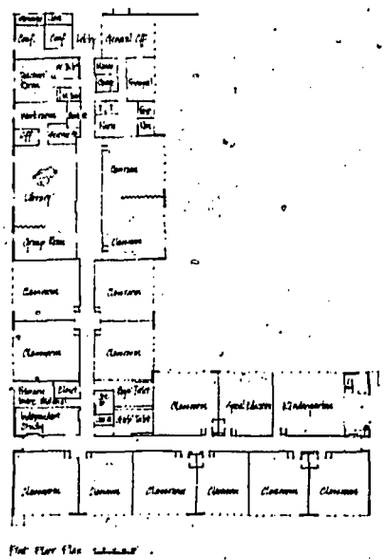
Built in 1964, Aiken is a one story school consisting of thirteen classrooms and one kindergarten room. In addition it houses three special education classrooms.



suggested



existing

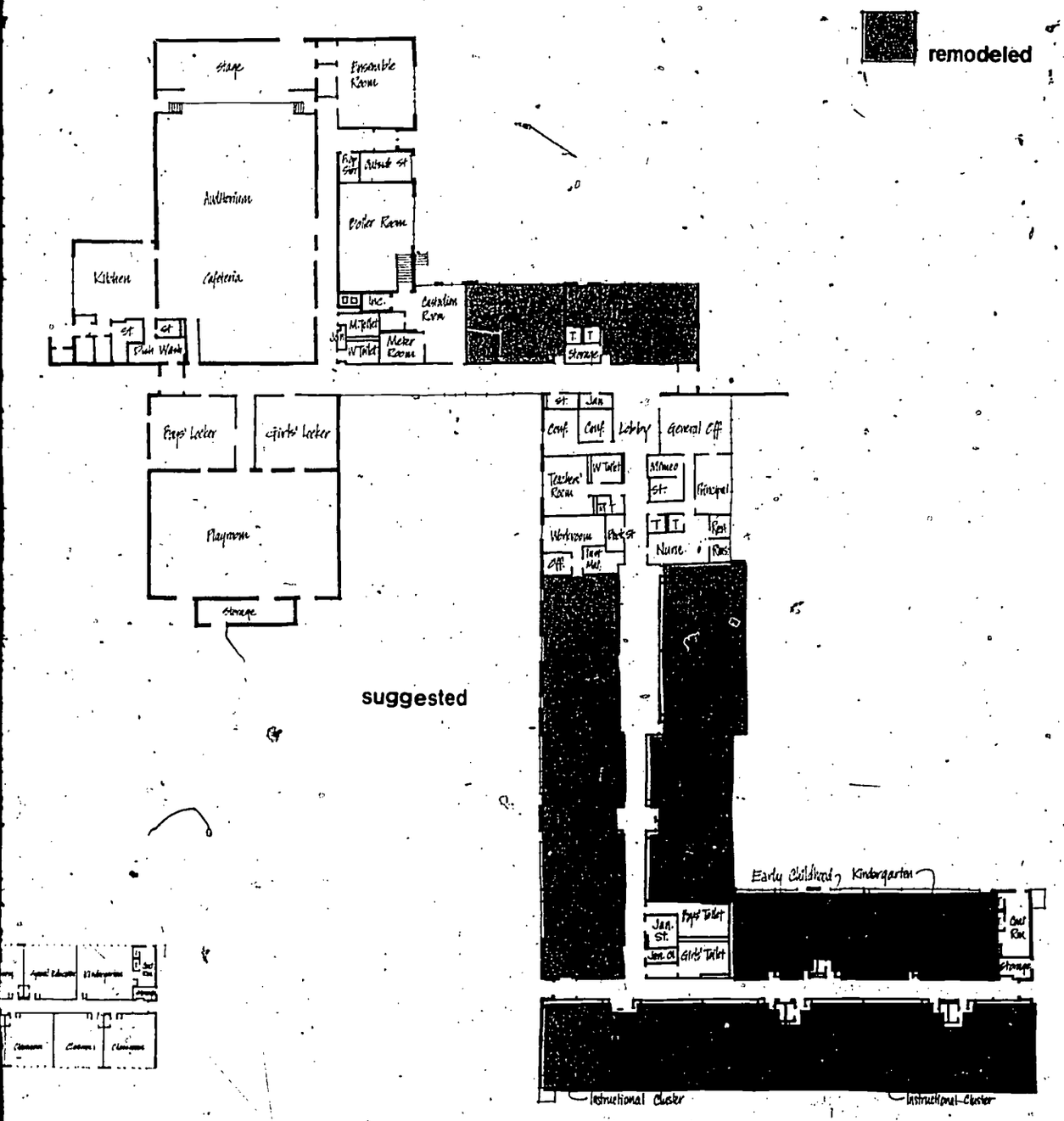


First Floor Plan

Instructional Cluster

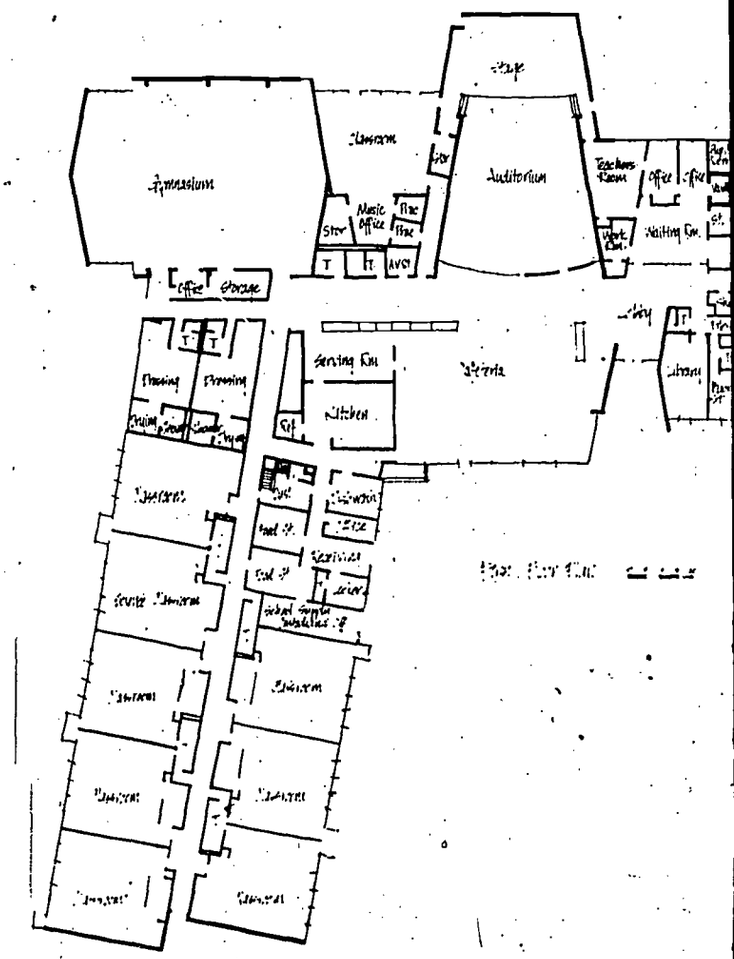
First Floor Plan

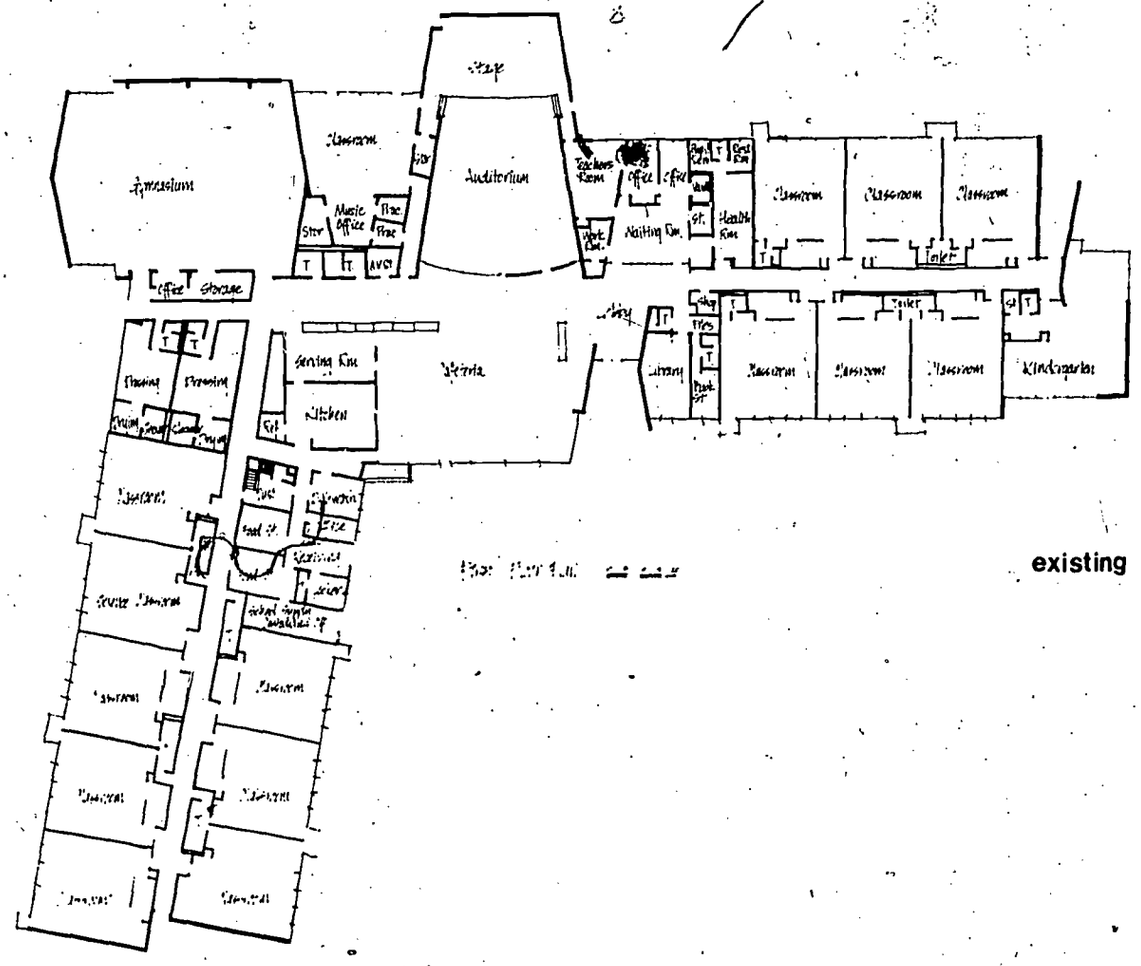
121


remodeled
Stage
Ensemble Room
Auditorium
Kitchen
Cafeteria
Boiler Room
Custodian Rm.
Meter Room
Storage
Boys' Locker
Girls' Locker
Playroom
Storage
suggested
Conf.
Conf.
Lobby
General Off
Teacher's Room
Mimeo
Principal
Nurse
Workroom
Early Childhood Kindergarten
Jan. St.
Boys' Toilet
Girls' Toilet
Instructional Cluster
Instructional Cluster
First Floor Plan

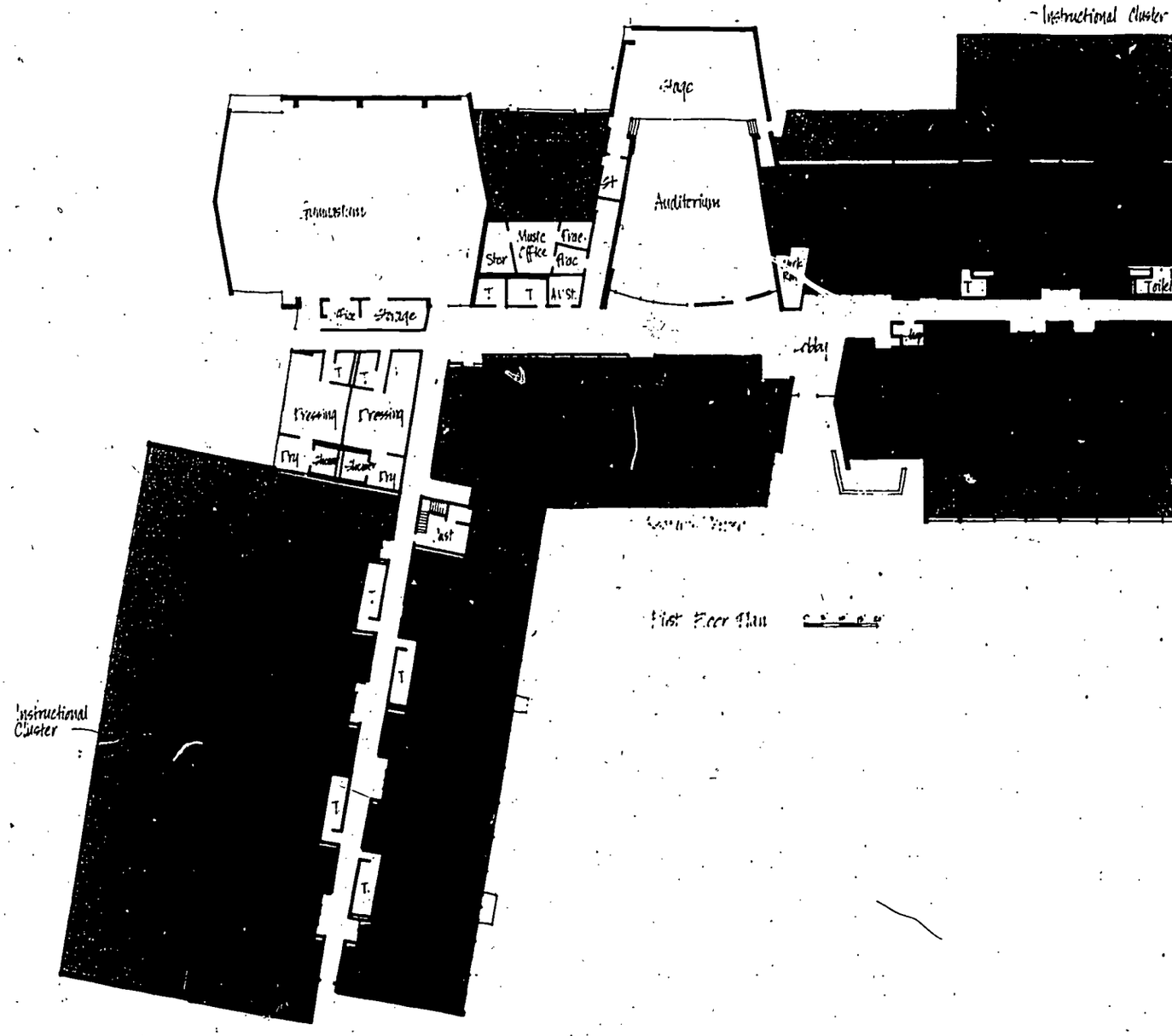
braeburn elementary school

Braeburn School, a one story building, was built in 1956 to house fourteen classrooms and one kindergarten room.

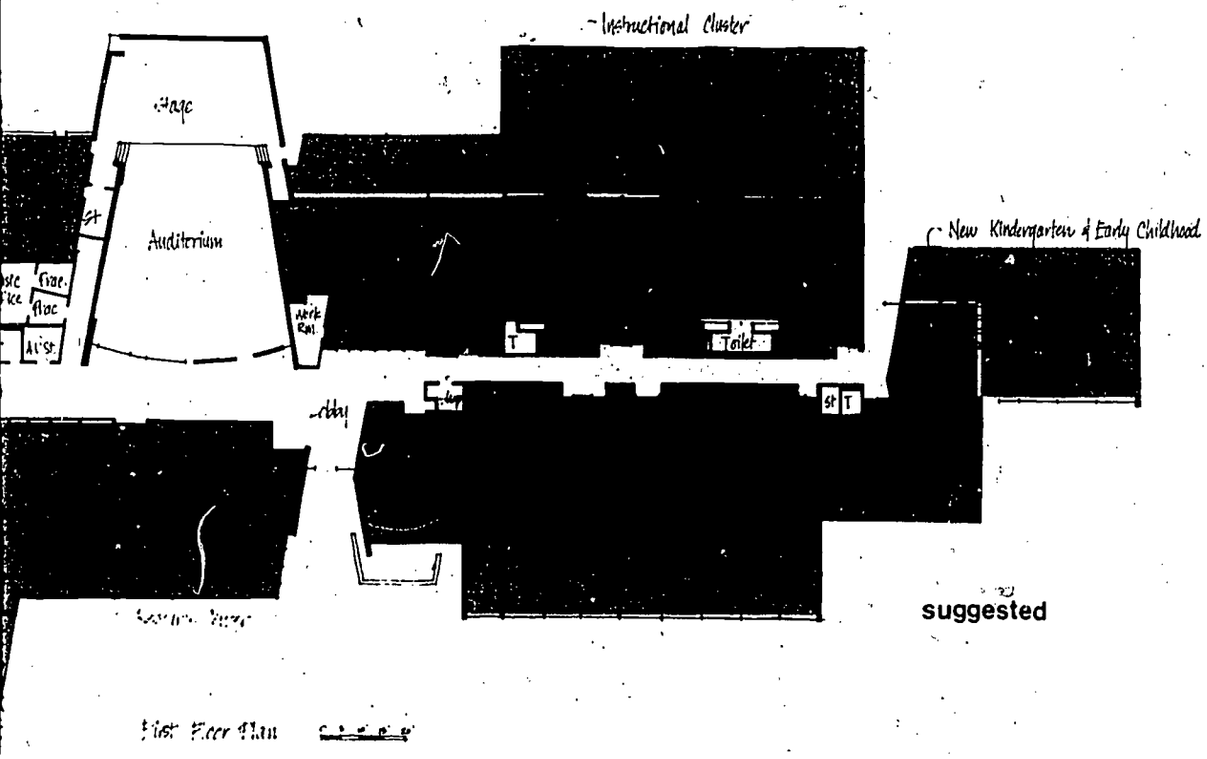



Gymnasium
Classroom
Music
Office
Stor
Auditorium
Teachers Room
Office
Office
Sewing Rm.
Health Rm.
Classroom
Classroom
Classroom
Toilet
Office
Storage
Sewing Rm.
Kitchen
Library
Classroom
Classroom
Classroom
Kindergarten
Toilet

existing



First Floor Plan



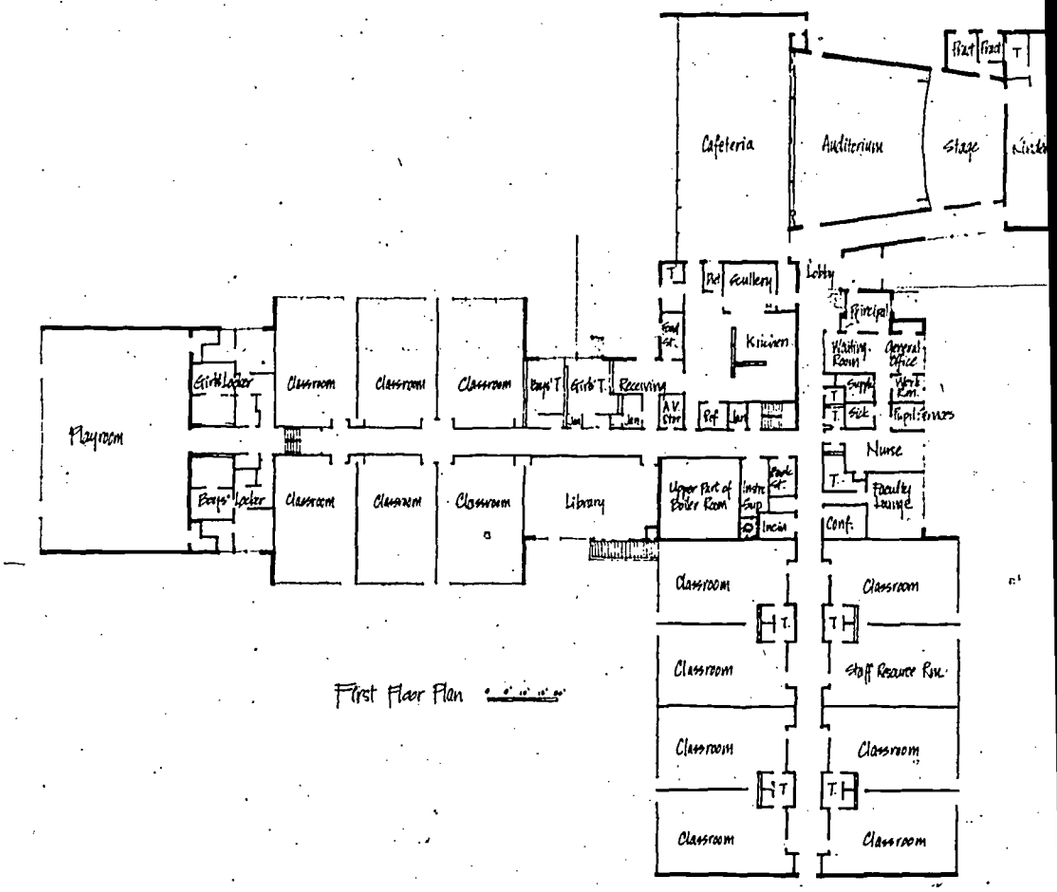
First Floor Plan

remodeled

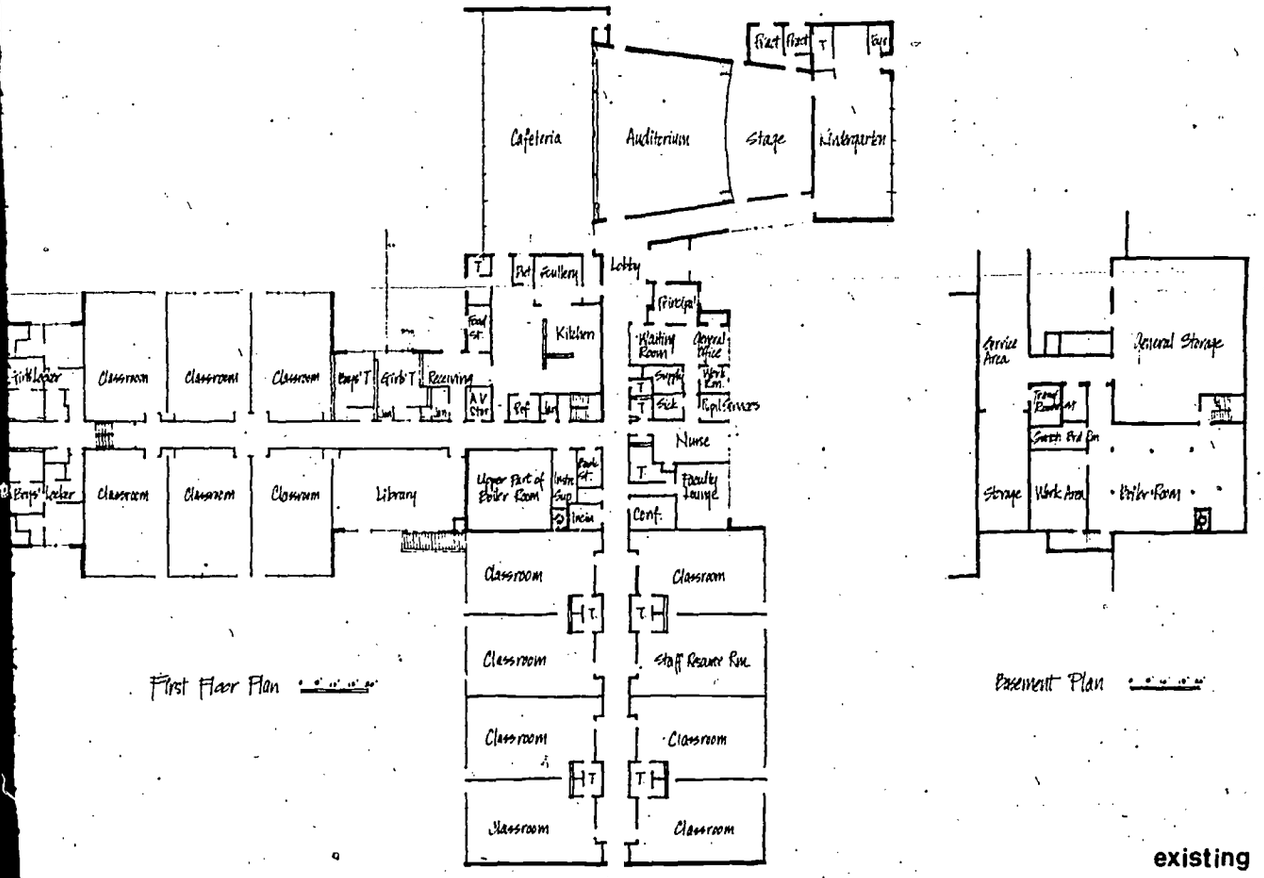
addition

bridlepath elementary school

Located on a very pleasant site, Bridlepath was built in 1959. It consists of thirteen classrooms and one kindergarten room. Maintenance and service areas are located in the basement.



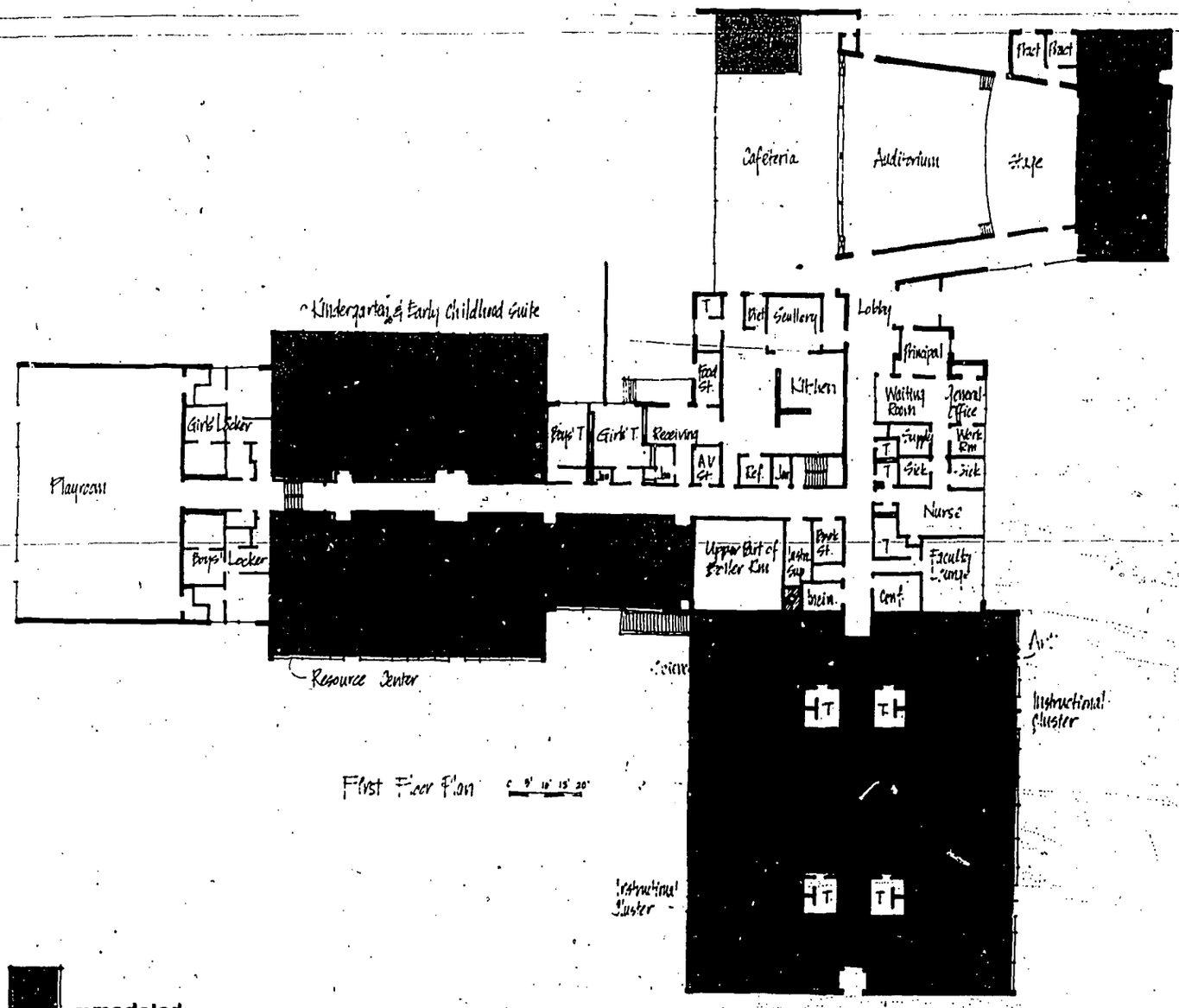
First Floor Plan



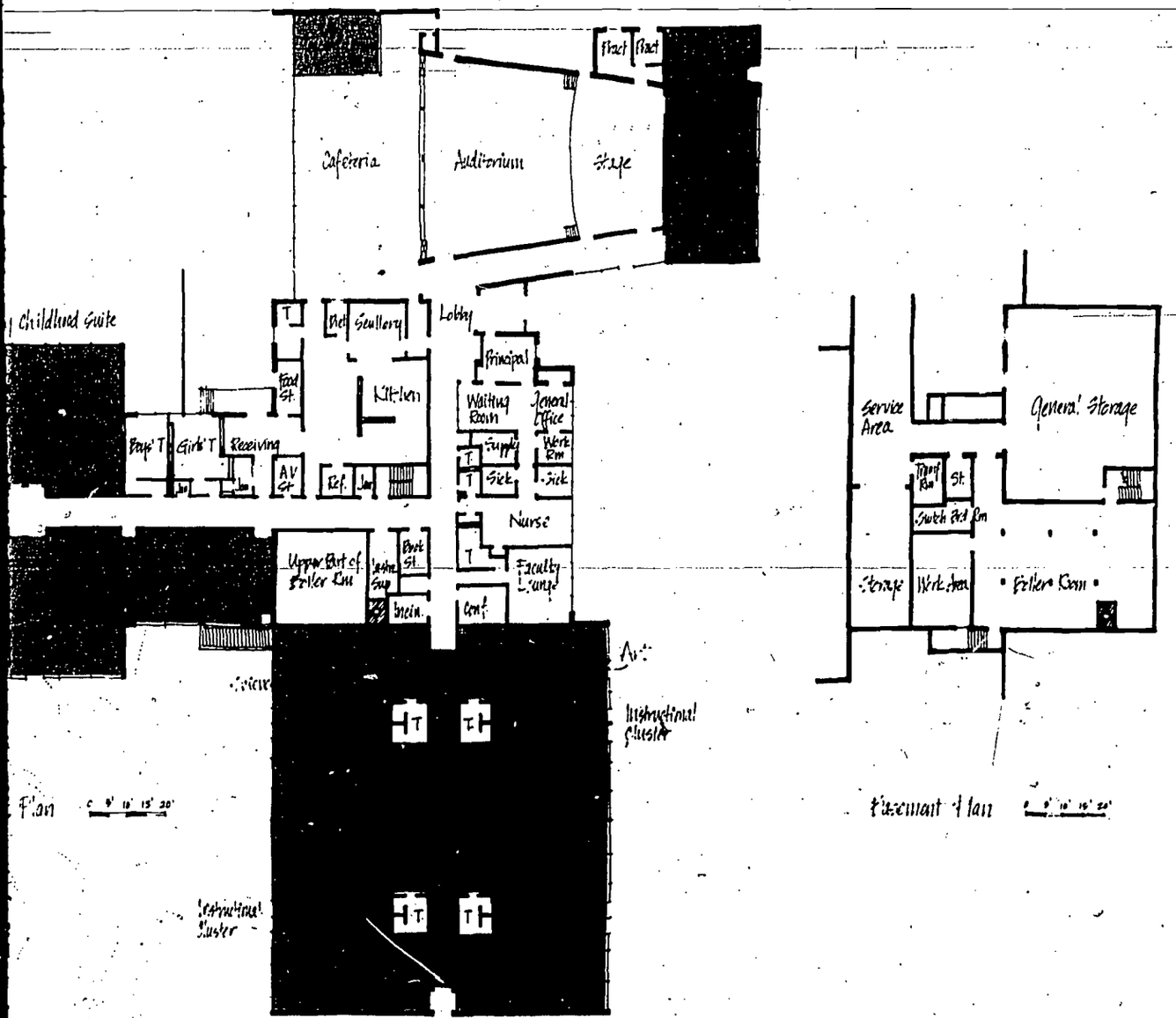
First Floor Plan

Basement Plan

existing



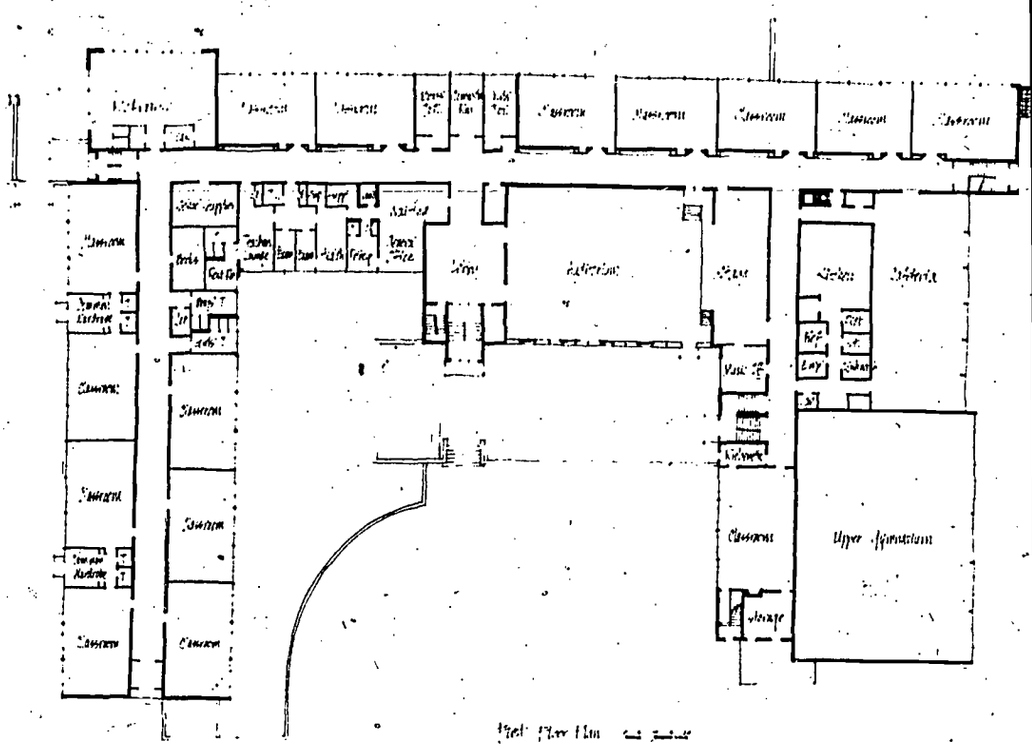
First Floor Plan


Cafeteria
Auditorium
Stage
Childhood Suite
Kitchen
Lobby
Principal
Waiting Room
General Office
Nurse
Faculty Lounge
Conf.
Receiving
Upper Part of Boiler Rm
Instructional Cluster
Instructional Cluster
Service Area
General Storage
Storage
Work Area
Boiler Room
Switch Brd Rm
Plan
Basement Plan

suggested

lloyd h. bugbee elementary school

Bugbee School, built in 1950, consists of fourteen classrooms and one kindergarten room on the first floor, and gymnasium, maintenance and service areas in the basement.



bee

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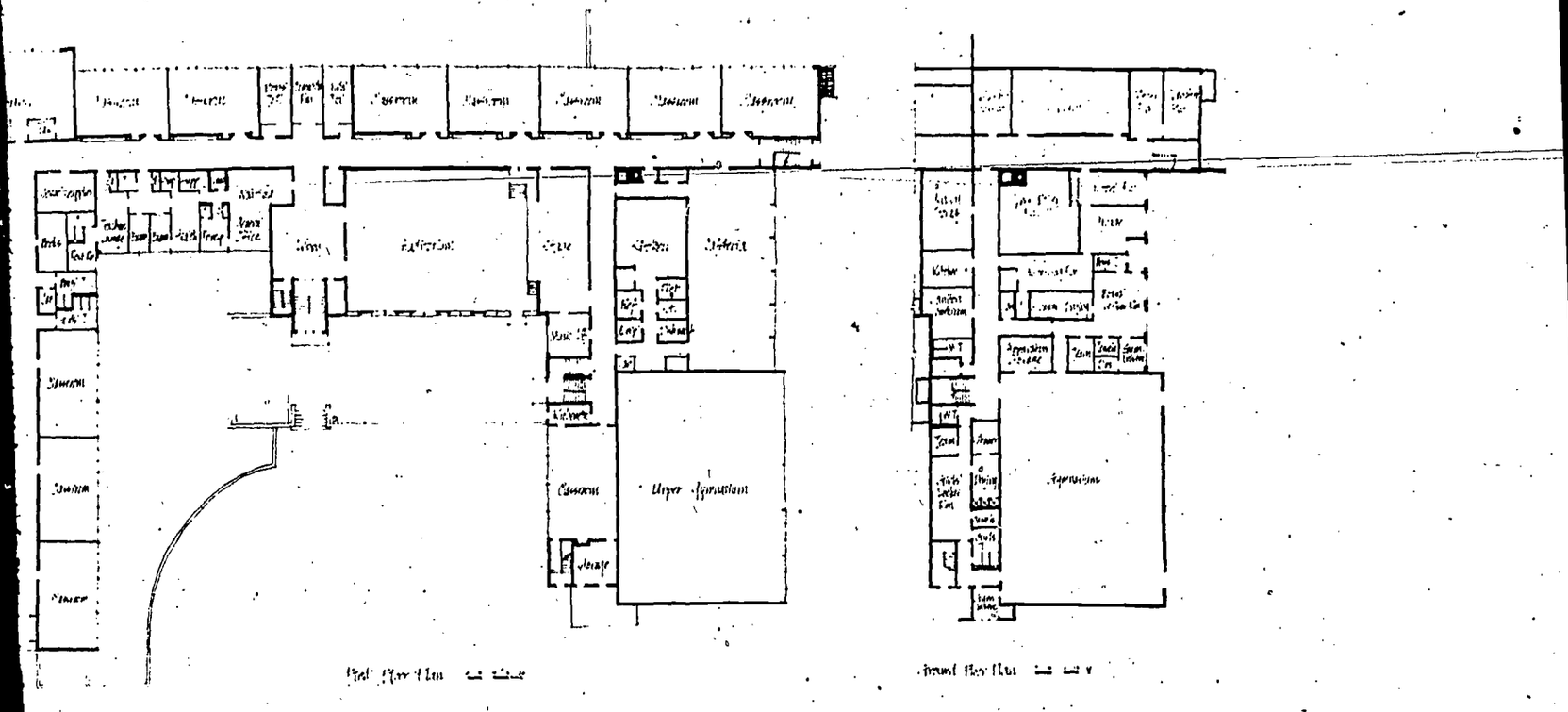
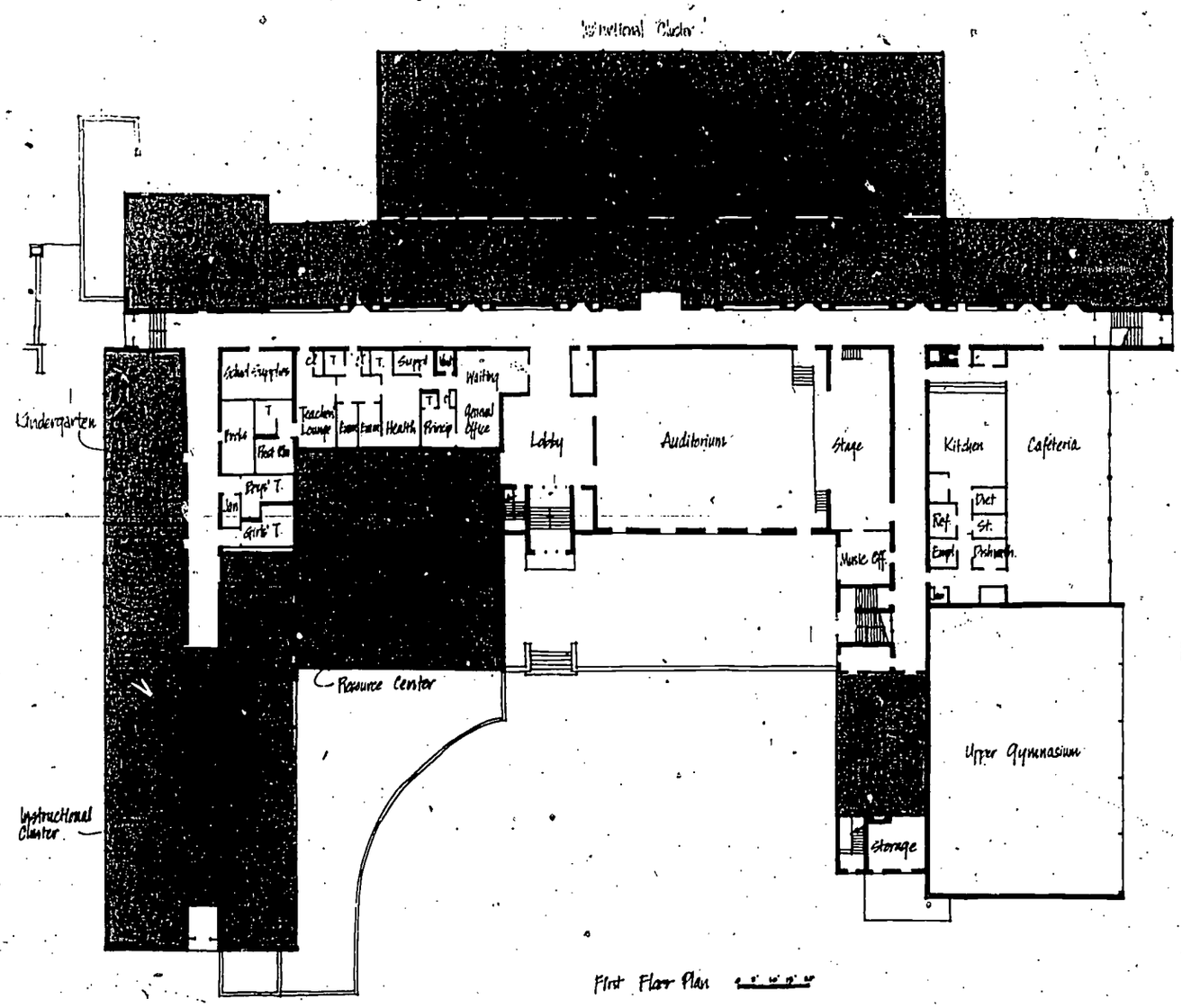


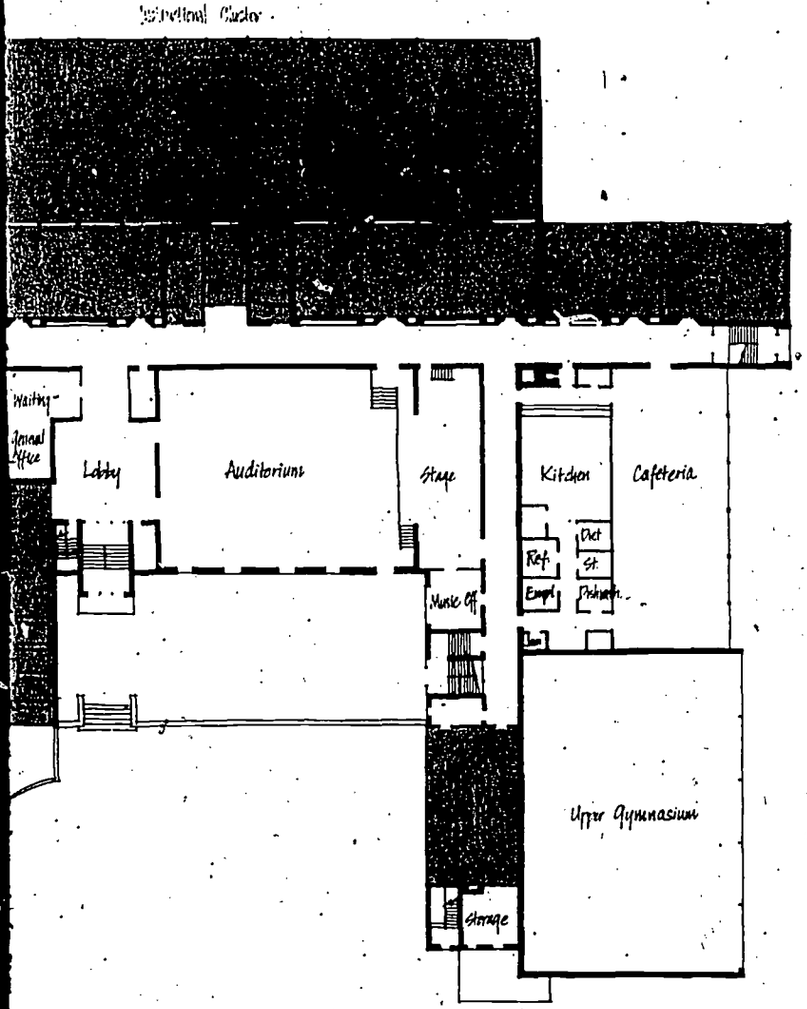
existing



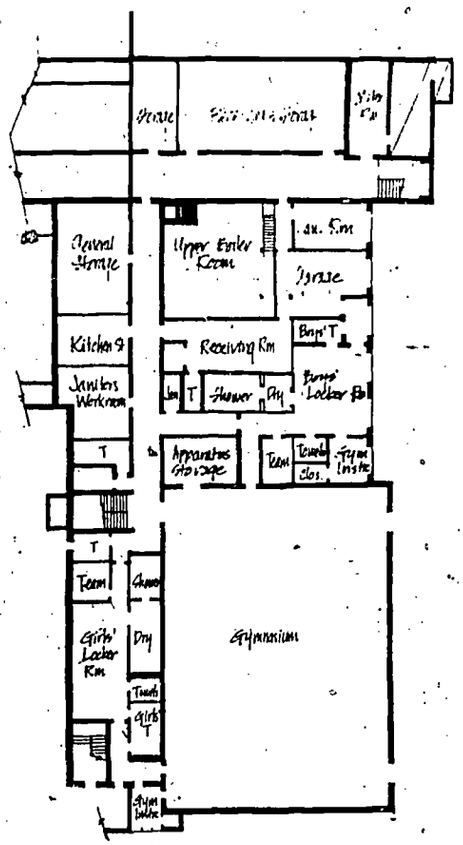
First Floor Plan

remodeled

addition



First Floor Plan

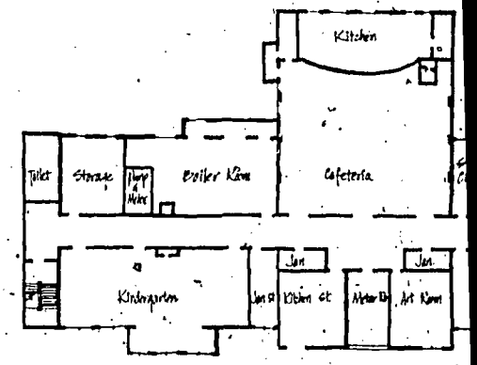


Ground Floor Plan

suggested

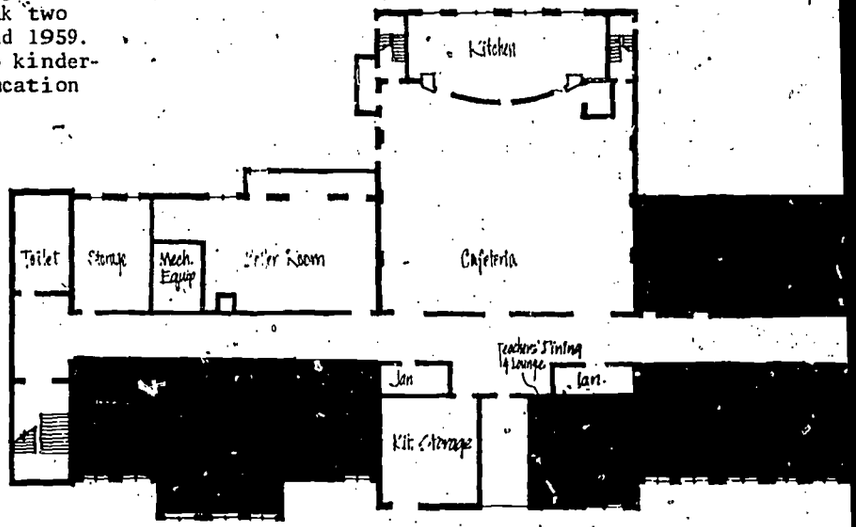
charter oak & elmwood elementary schools

The original three story structure of the Charter Oak Elementary School was constructed in 1929. Two additions were subsequently provided in 1953 and 1959. Facilities include twelve classrooms, one kindergarten room and three special education classrooms.



Basement Plan

Elmwood has the same basic floor plans as Charter Oak. The original building was constructed in 1928. Like Charter Oak two additions were provided in 1953 and 1959. It includes twelve classrooms, two kindergarten rooms and three special education classrooms.



remodeled

Basement Plan

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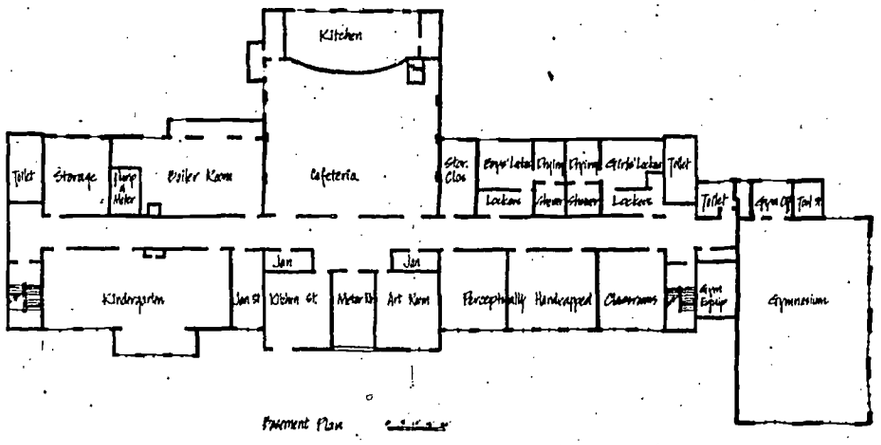
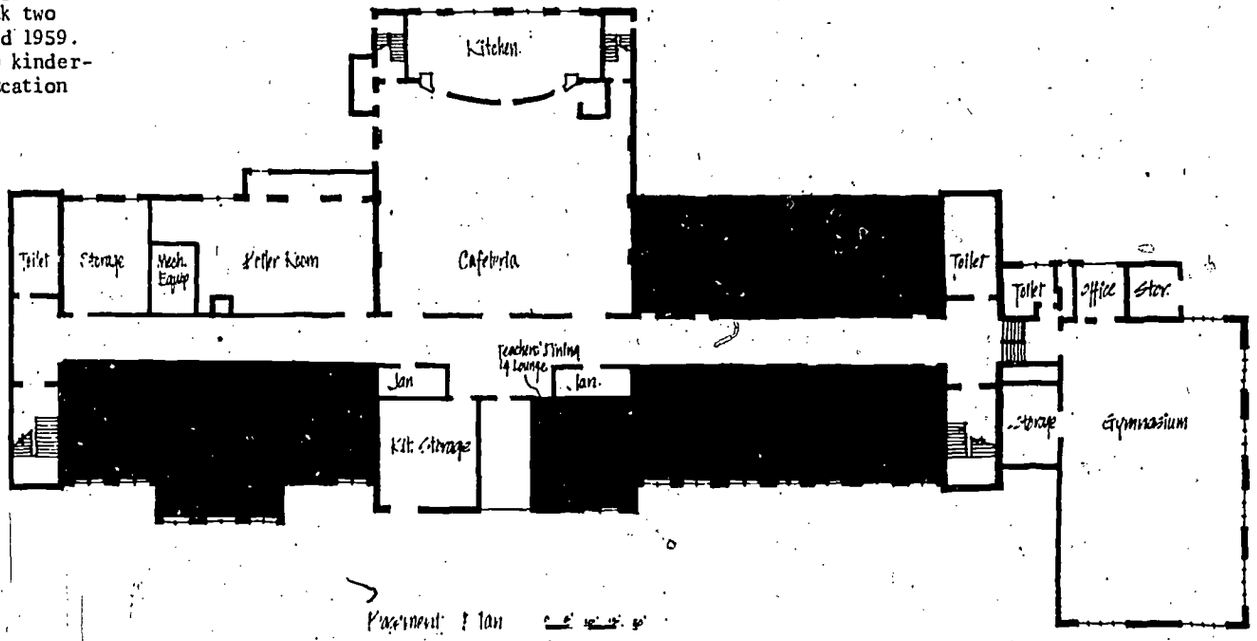


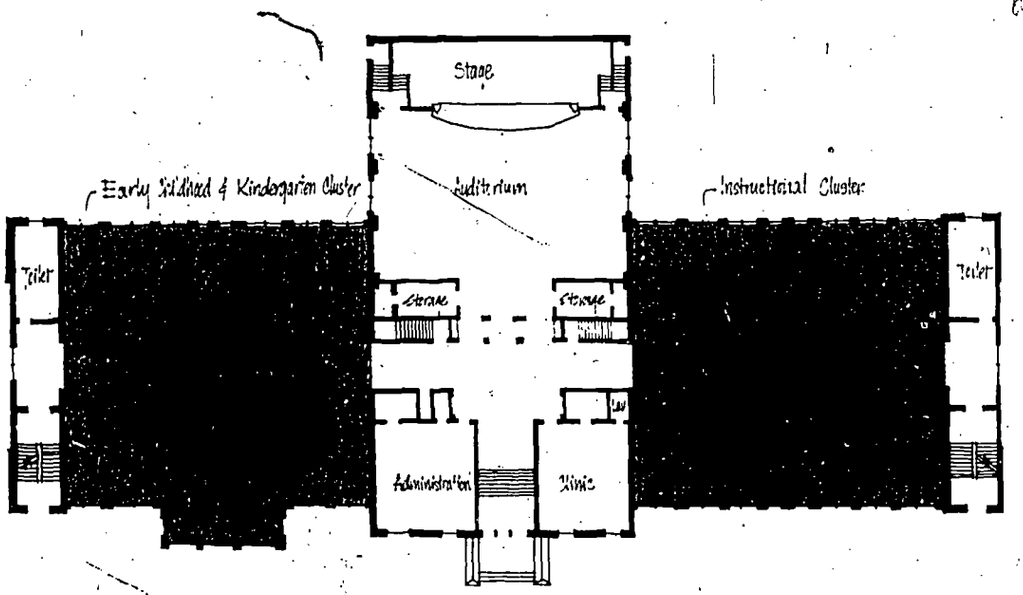
Basement Plan

existing



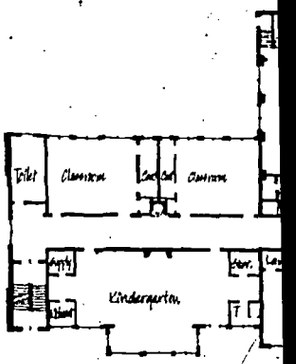
Basement Plan

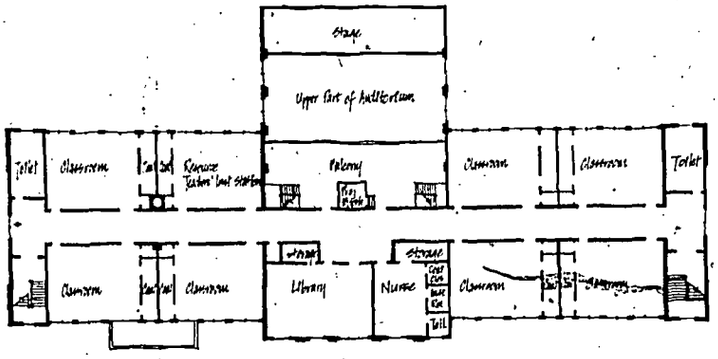
suggested



First Floor Plan

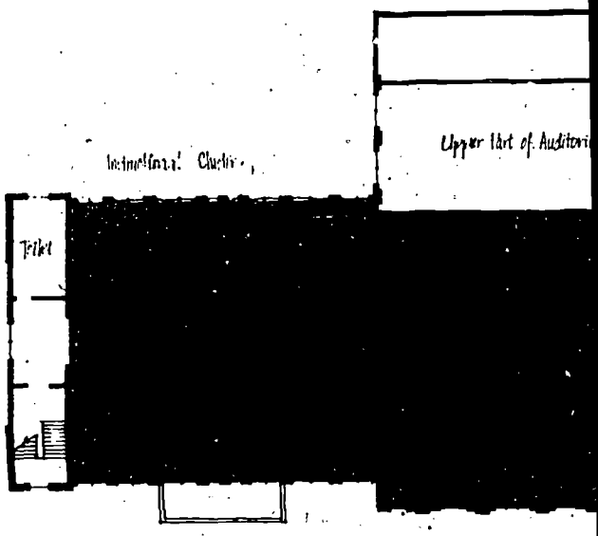
suggested



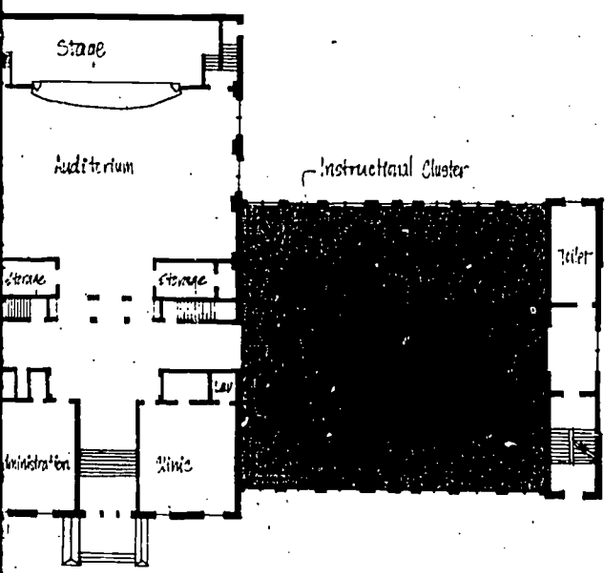


Second Floor Plan

existing

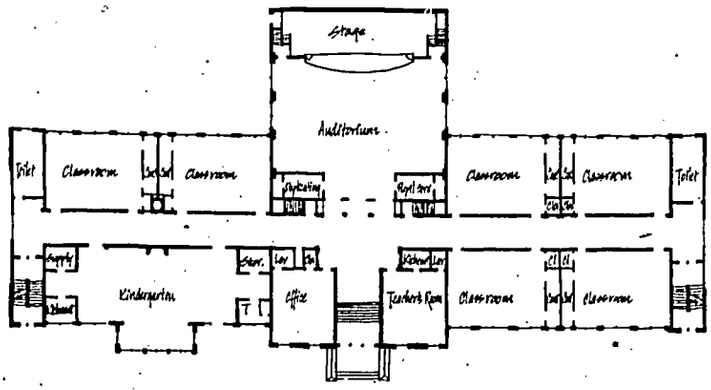


Second Floor Plan



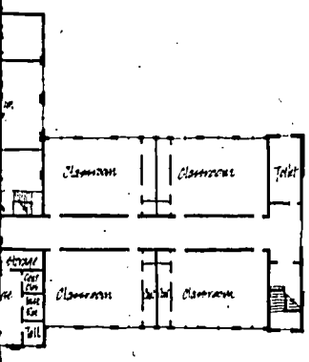
Floor Plan

suggested

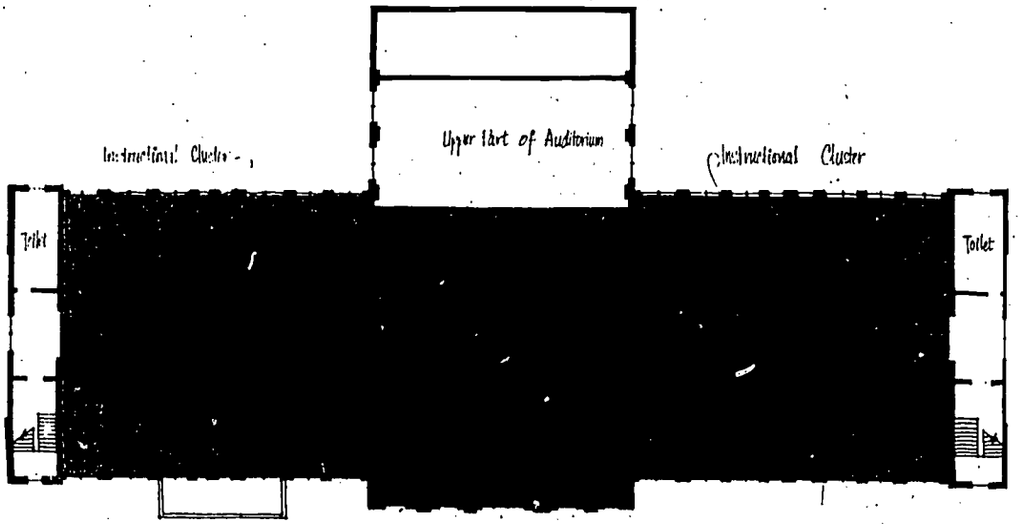


First Floor Plan

existing



existing

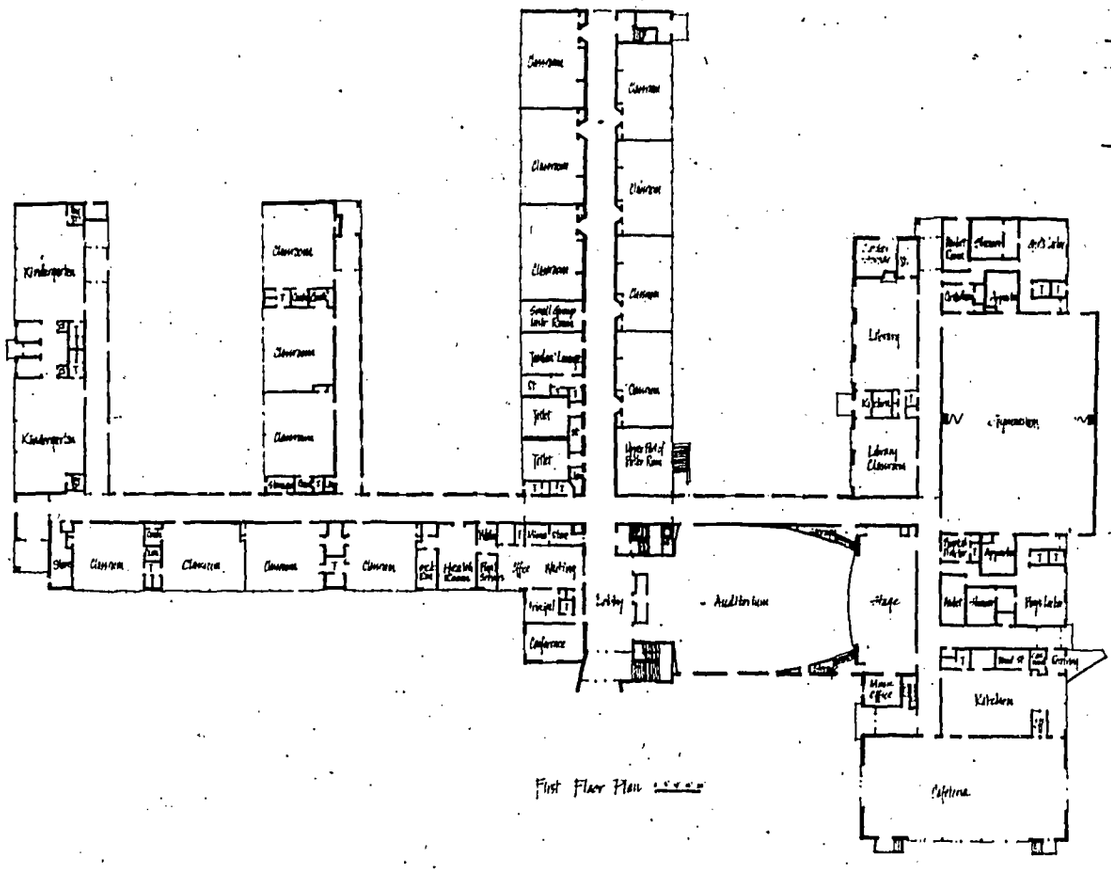


Second Floor Plan

suggested

louise duffy elementary school

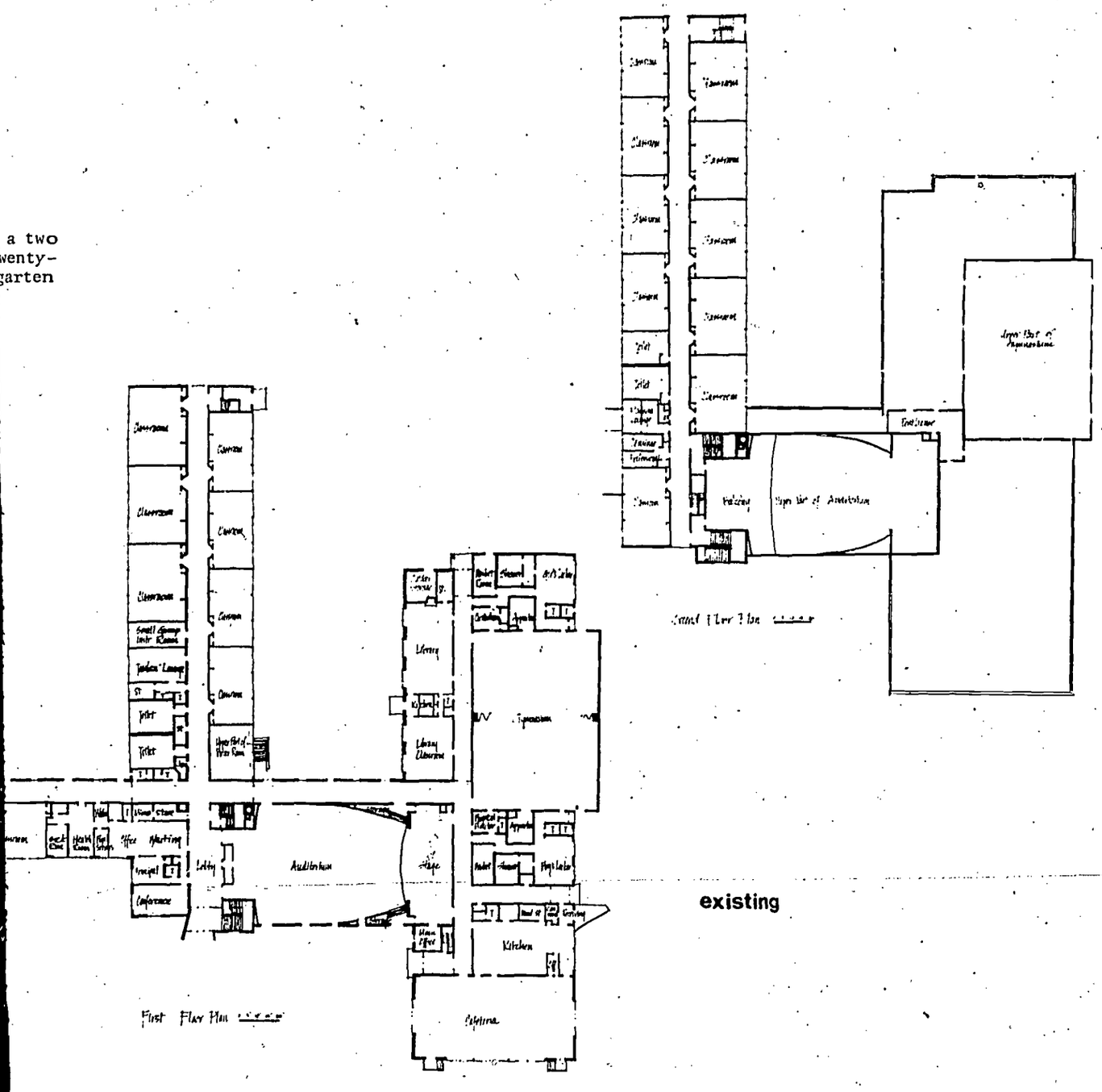
Duffy, constructed in 1952, is a two story building accommodating twenty-four classrooms and two kindergarten rooms.

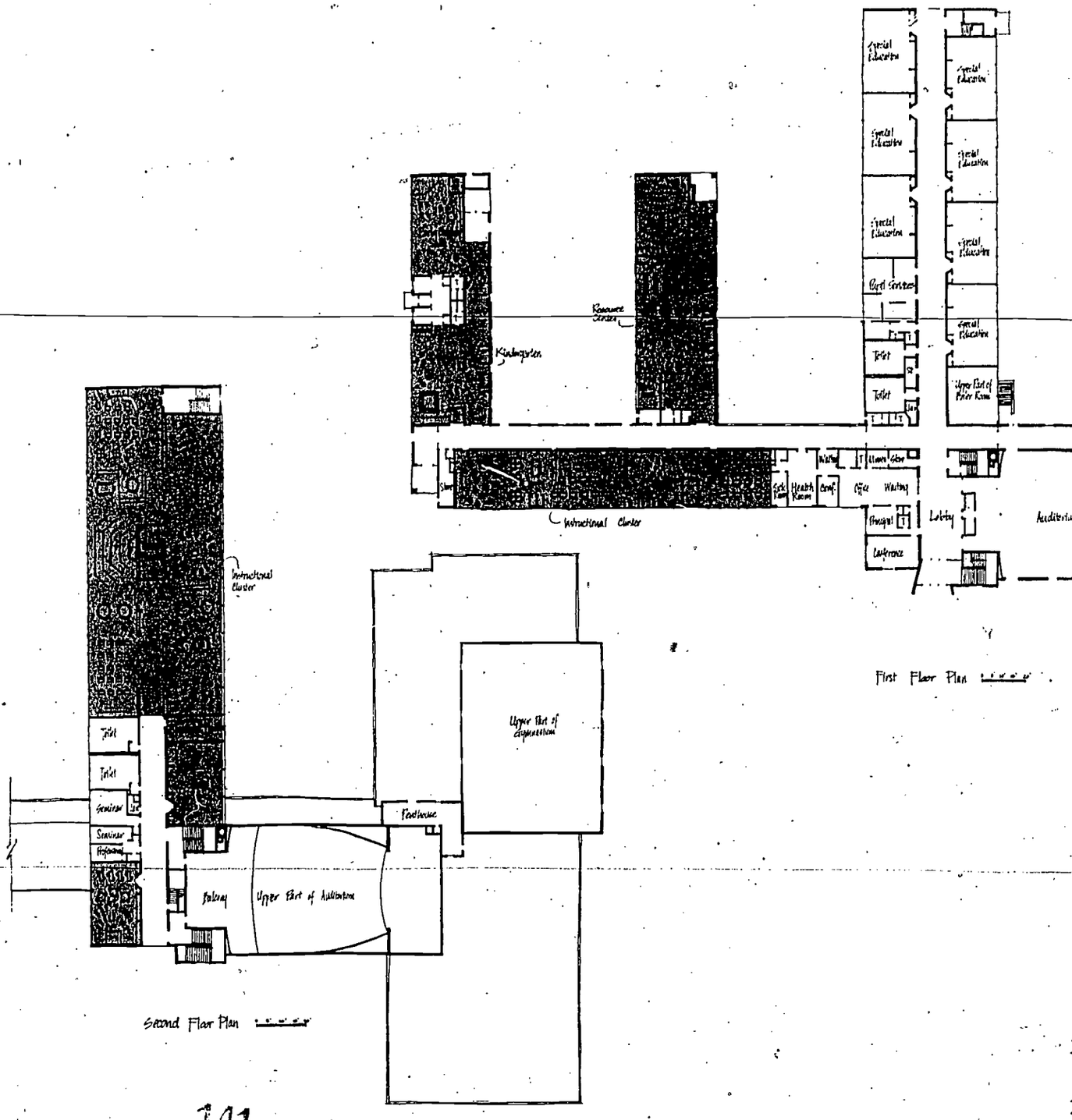


First Floor Plan

existi

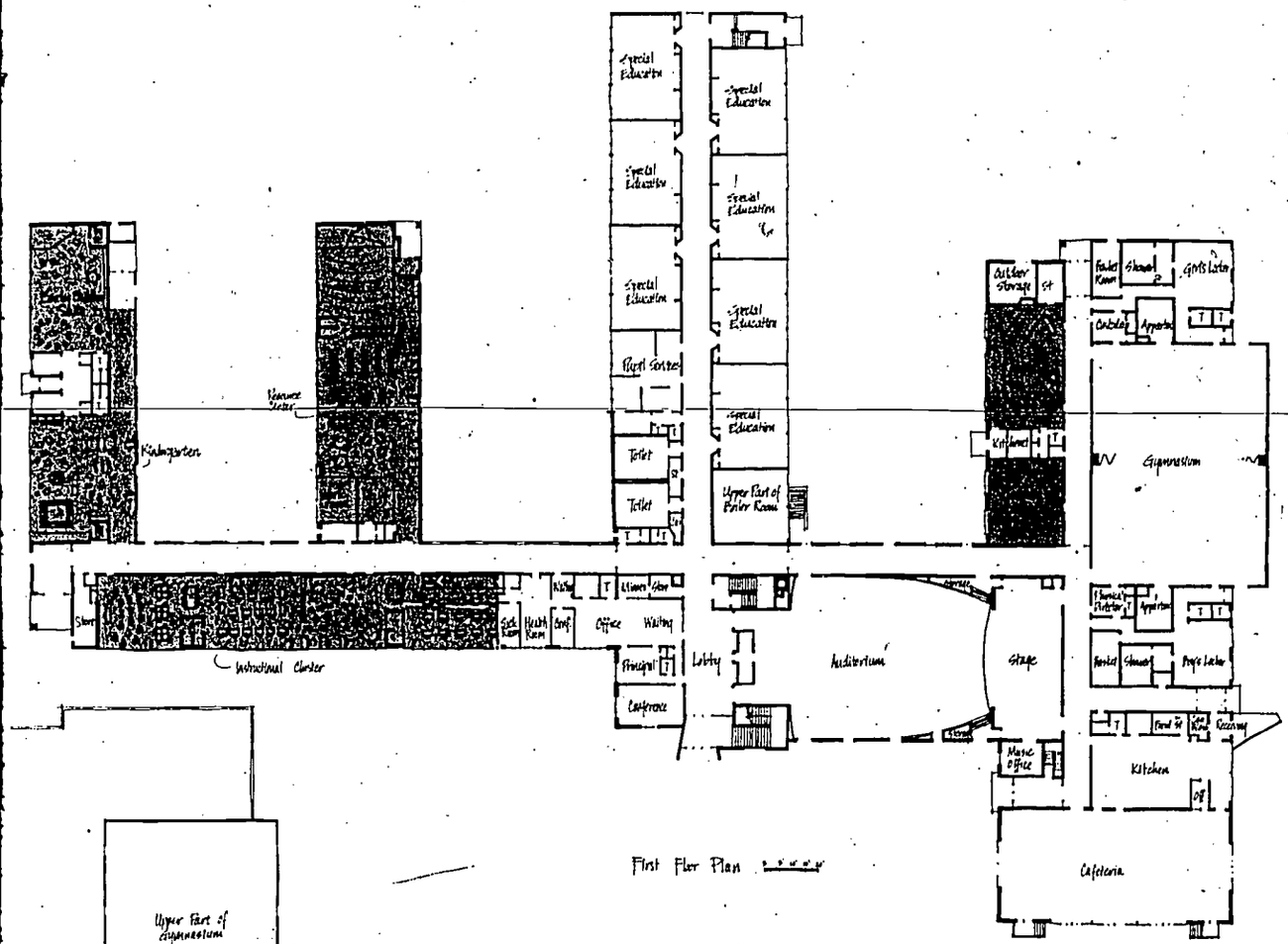
a two
wenty-
garten

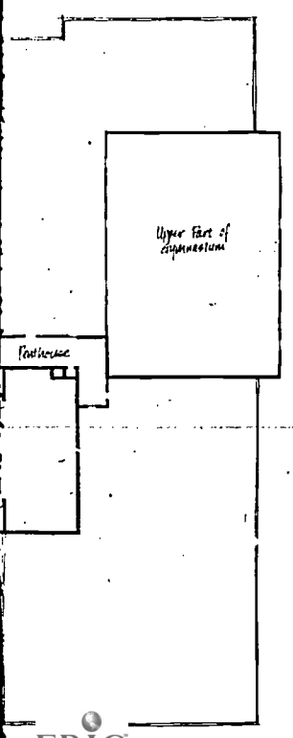




First Floor Plan

Second Floor Plan



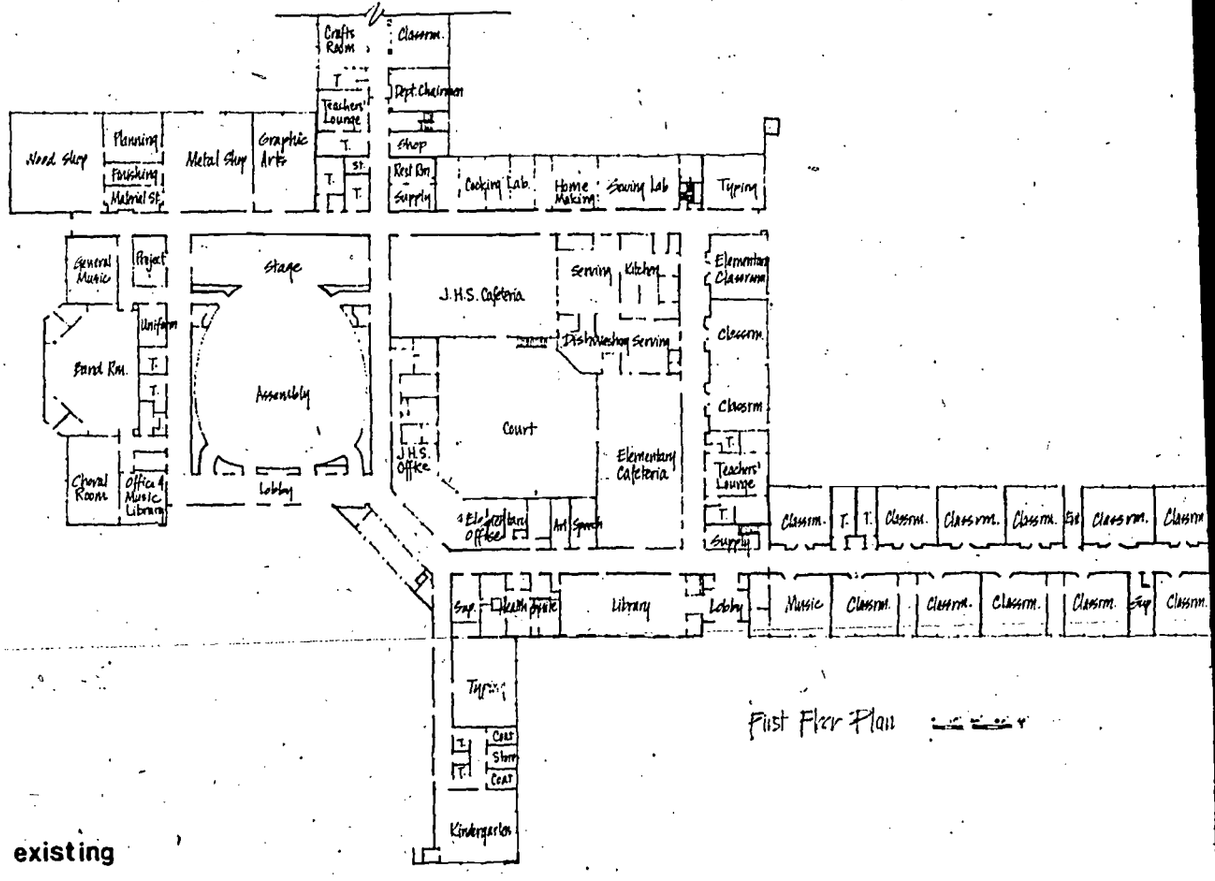


suggested

remodeled

king philip elementary school

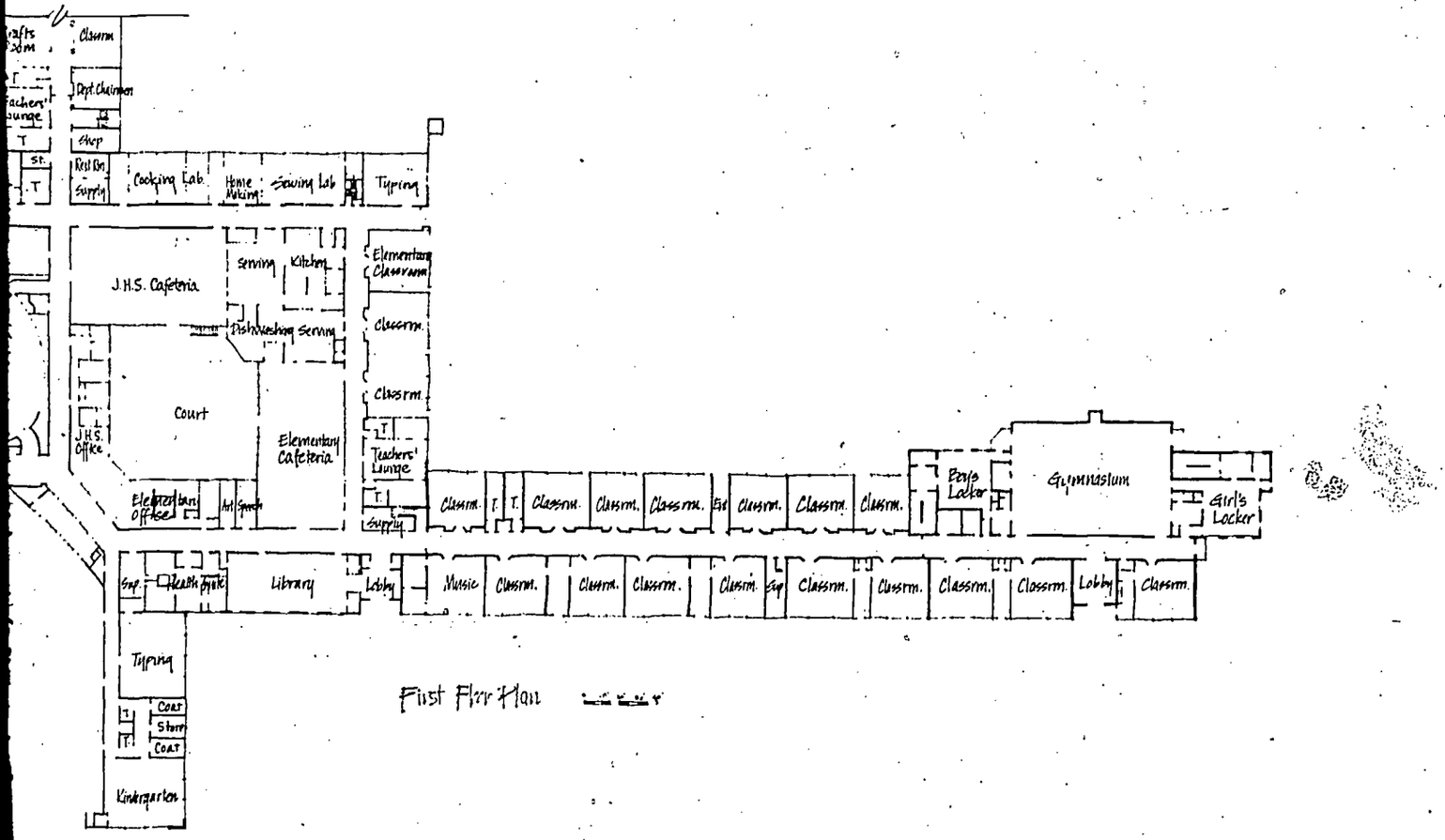
King Philip School, built in 1955 is located on a fairly large site, and accommodates both an elementary and a junior high school in separate wings. The elementary school wing consists of nineteen classrooms and one kindergarten room.



First Floor Plan

existing

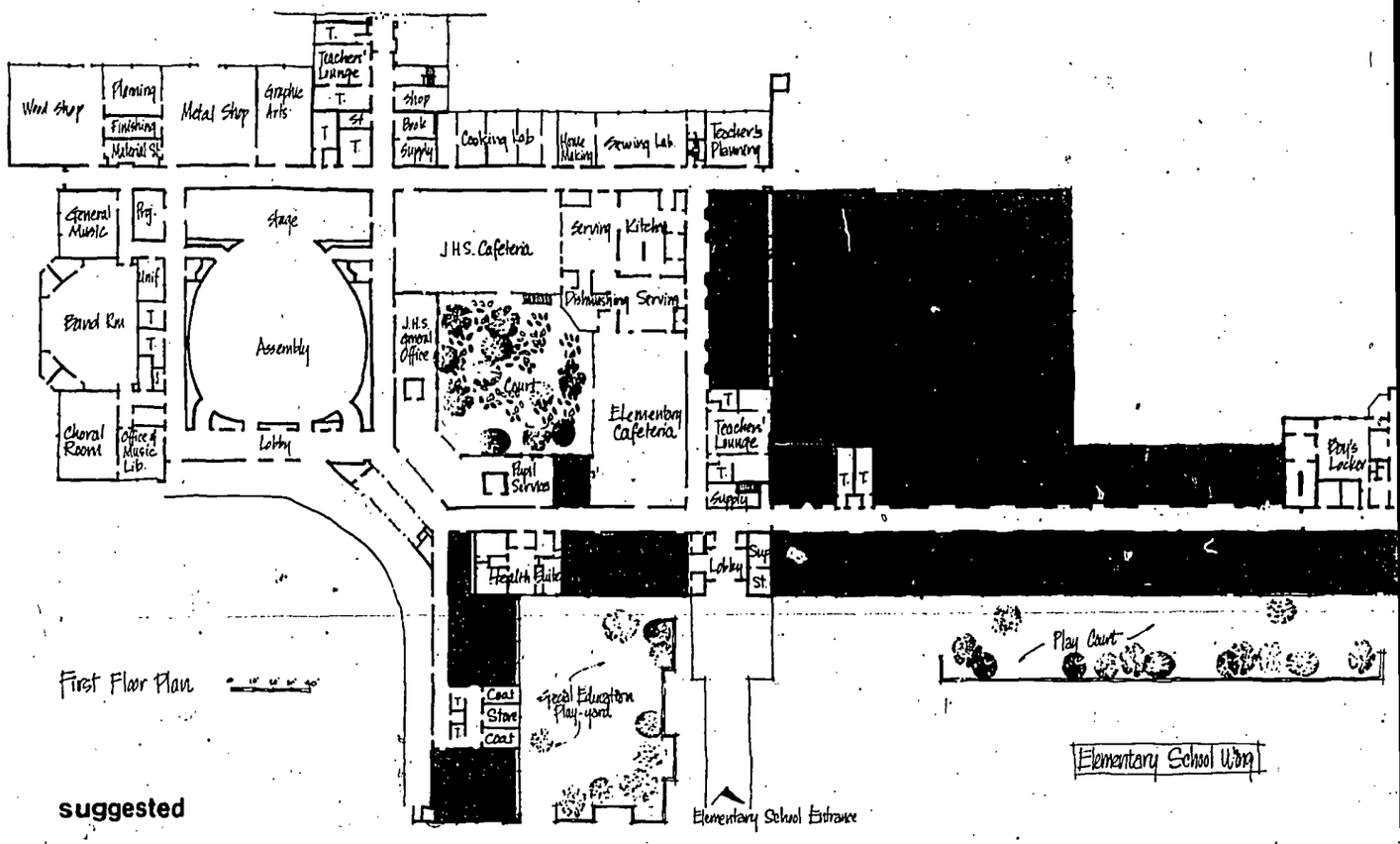
King Philip School, built in 1955 is located on a fairly large site, and accommodates both an elementary and a junior high school in separate wings. The elementary school wing consists of nineteen classrooms and one kindergarten room.

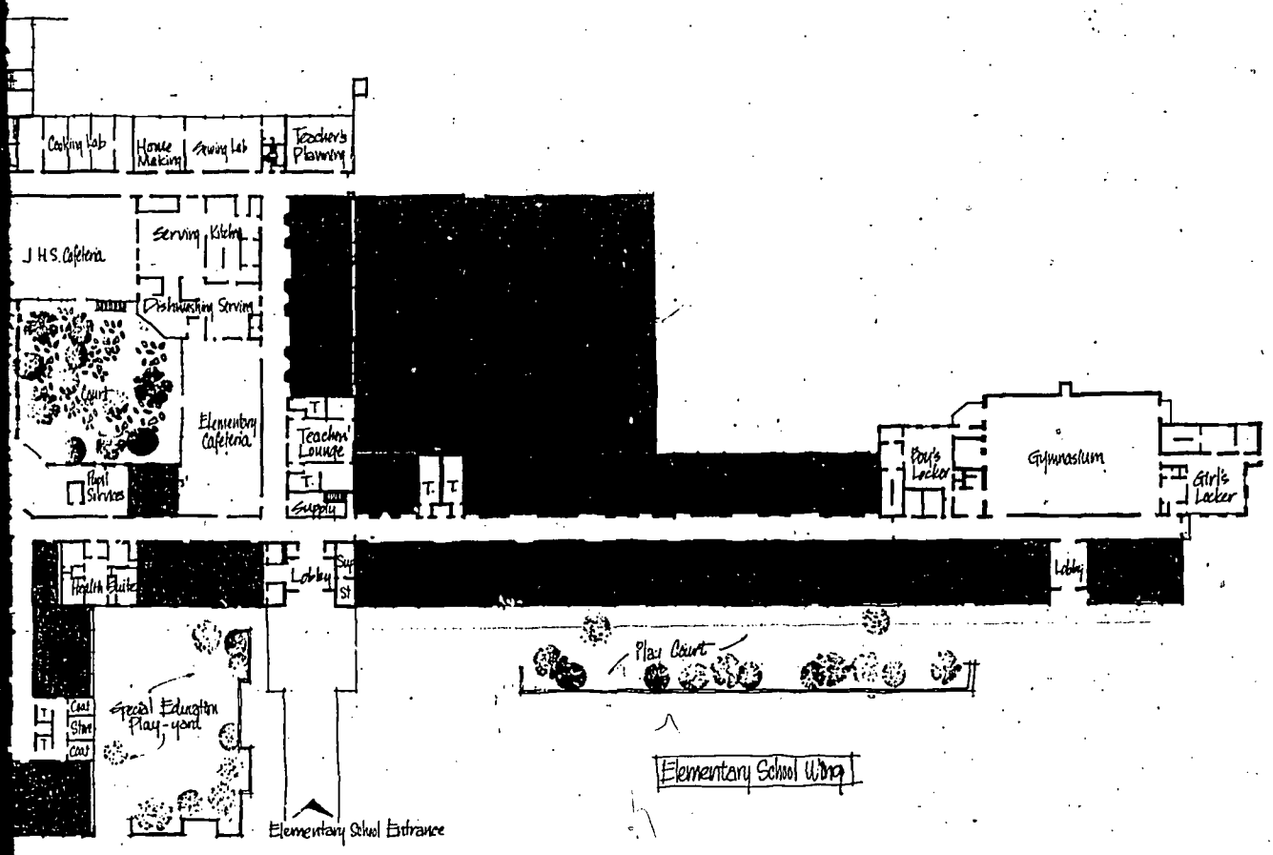


First Flr Plan

remodeled

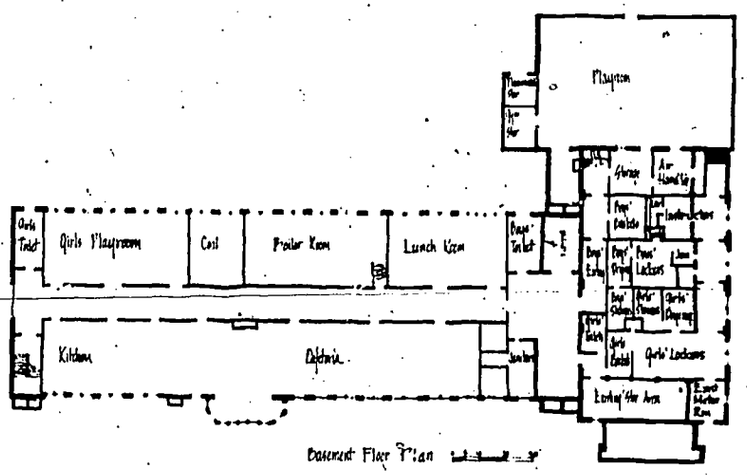
addition



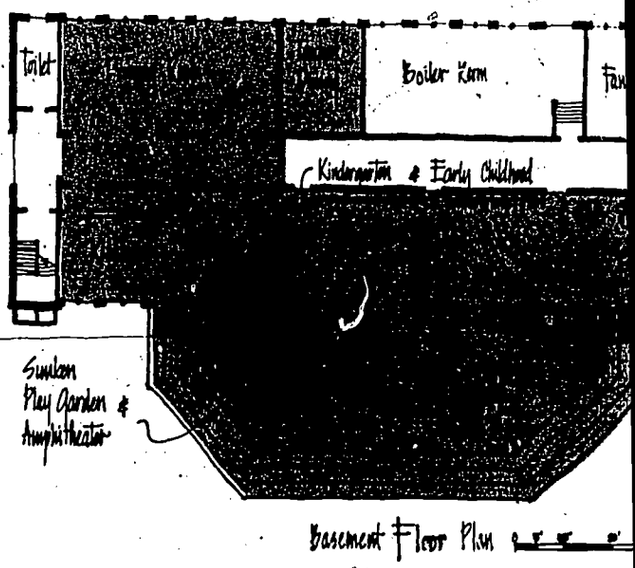

Cooking Lab
House Making
Sewing Lab
Teacher's Planning
J.H.S. Cafeteria
Serving
Kitchen
Dishwashing
Serving
Court
Elementary Cafeteria
Teachers' Lounge
Supply
Boy's Locker
Gymnasium
Girl's Locker
Health Suite
Lobby
Lobby
Play Court
Special Education Play-yard
Court
Shelter
Court
Elementary School Entrance
Elementary School Wing

edward morley elementary school

Built in 1927, with a 1952 addition, Morley is a three story building consisting of fourteen classrooms and two rooms for kindergarten.

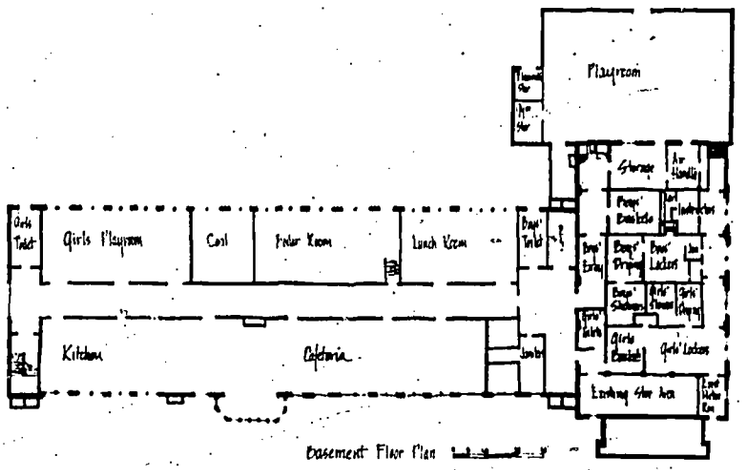


existing



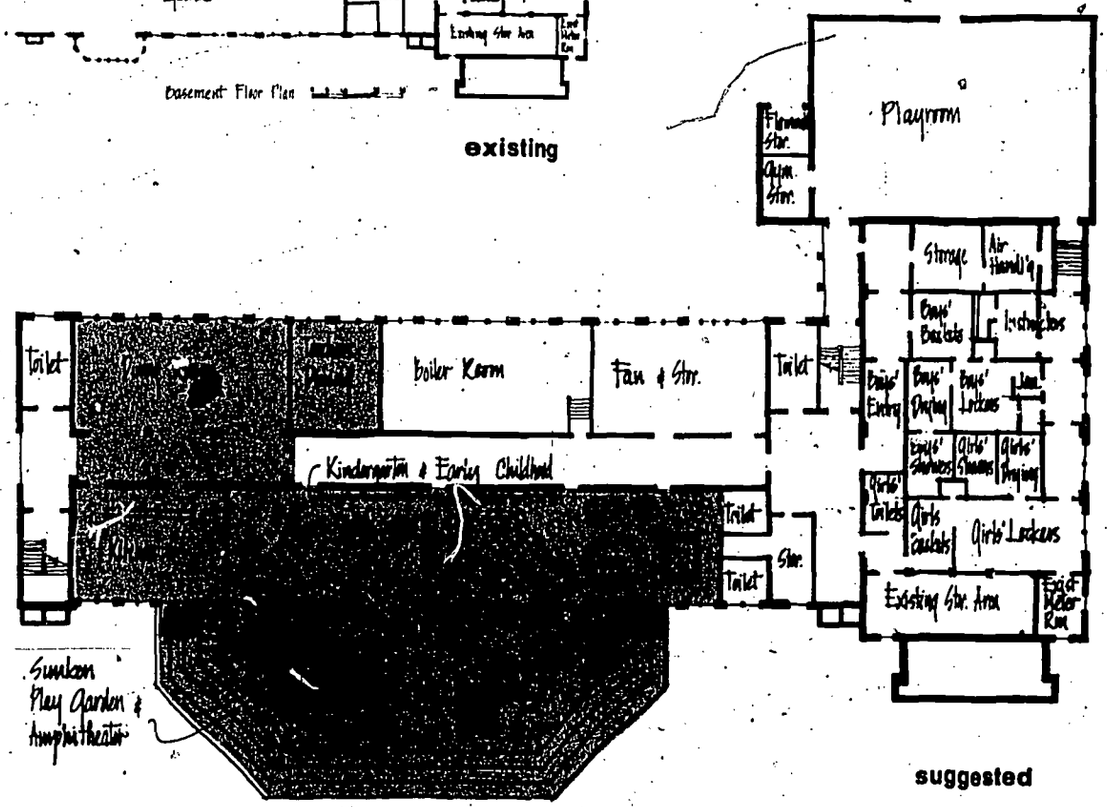
remodeled

rley



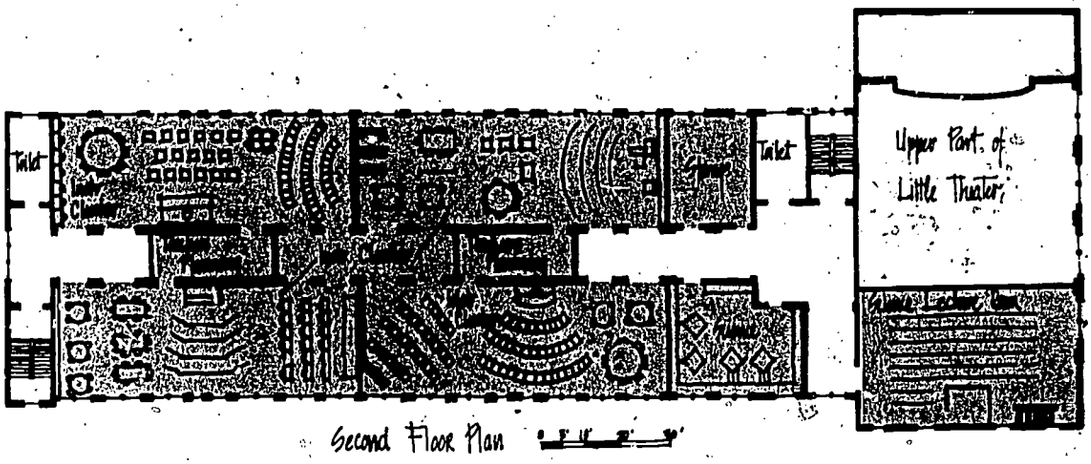
Basement Floor Plan

existing

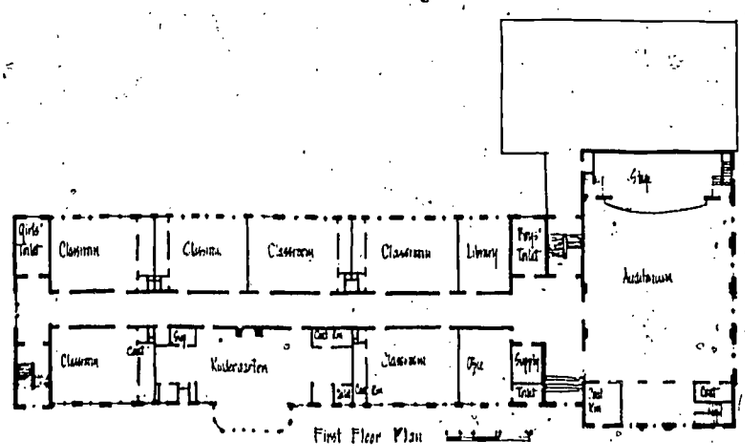


suggested

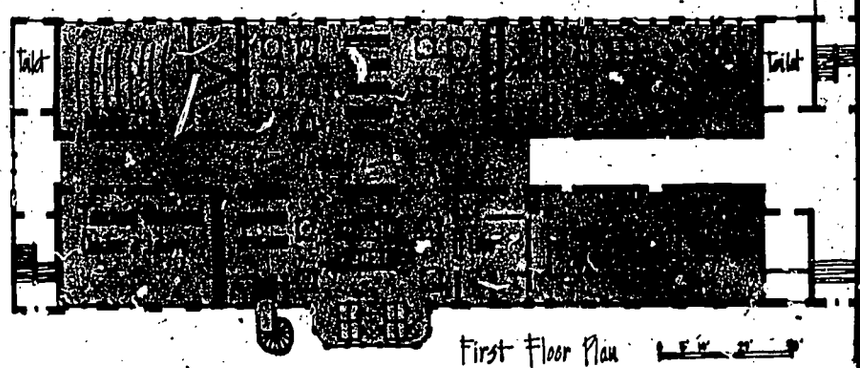
Basement Floor Plan



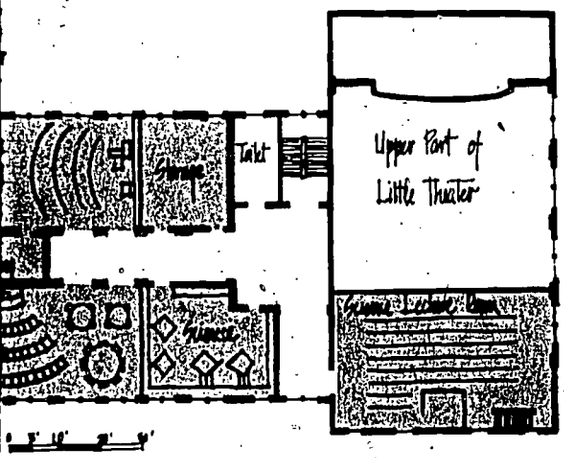
suggested



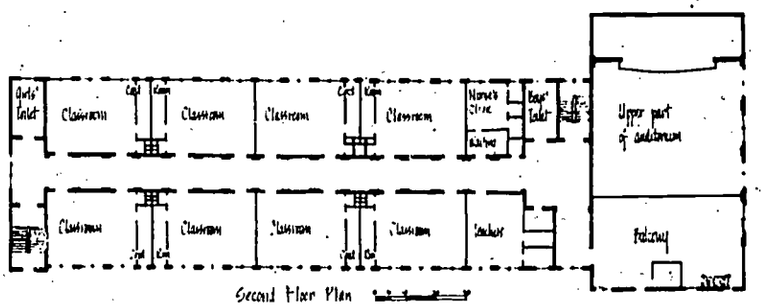
existing



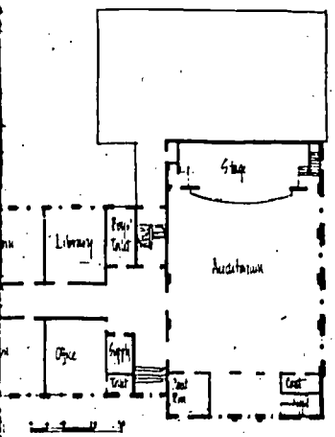
remodeled



suggested



existing

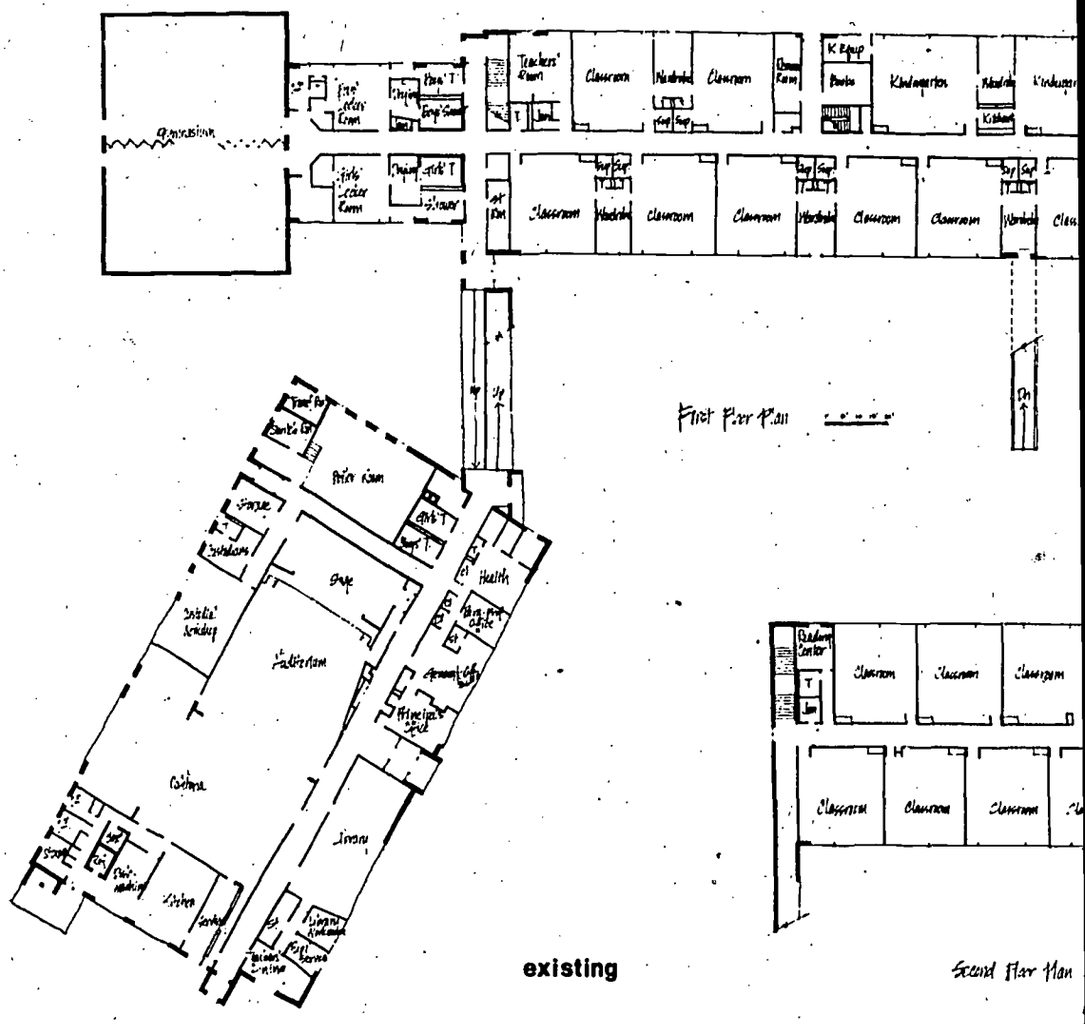


existing

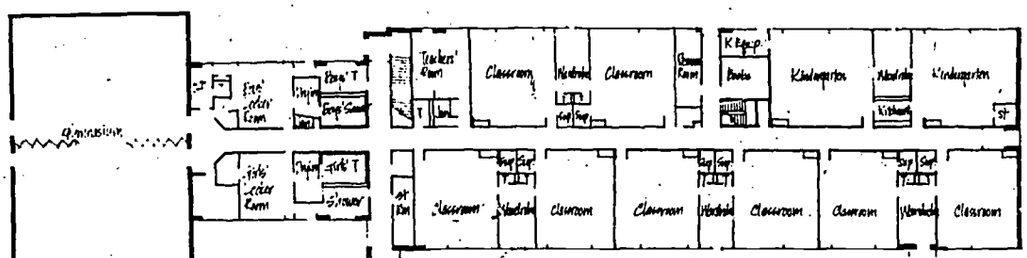
suggested

eric g. norfeldt elementary school

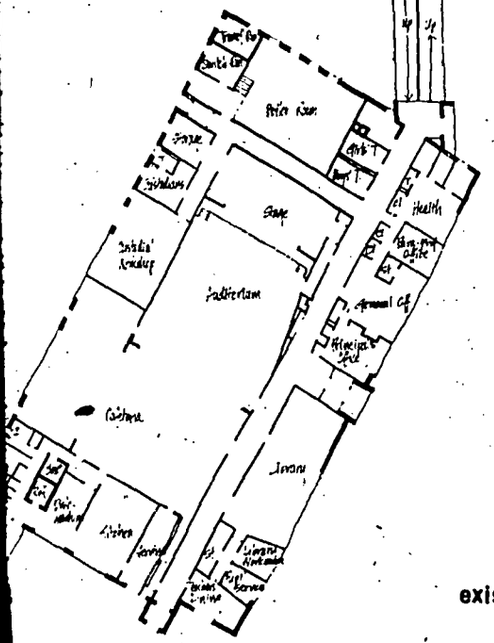
Norfeldt is a two story building built in 1958 accommodating twenty classrooms and two kindergarten areas.



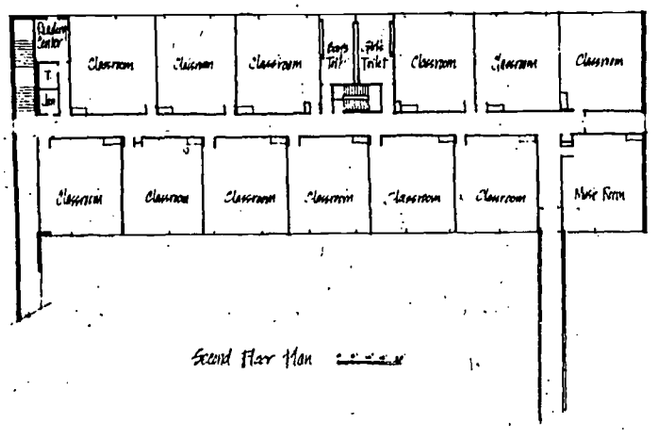
existing



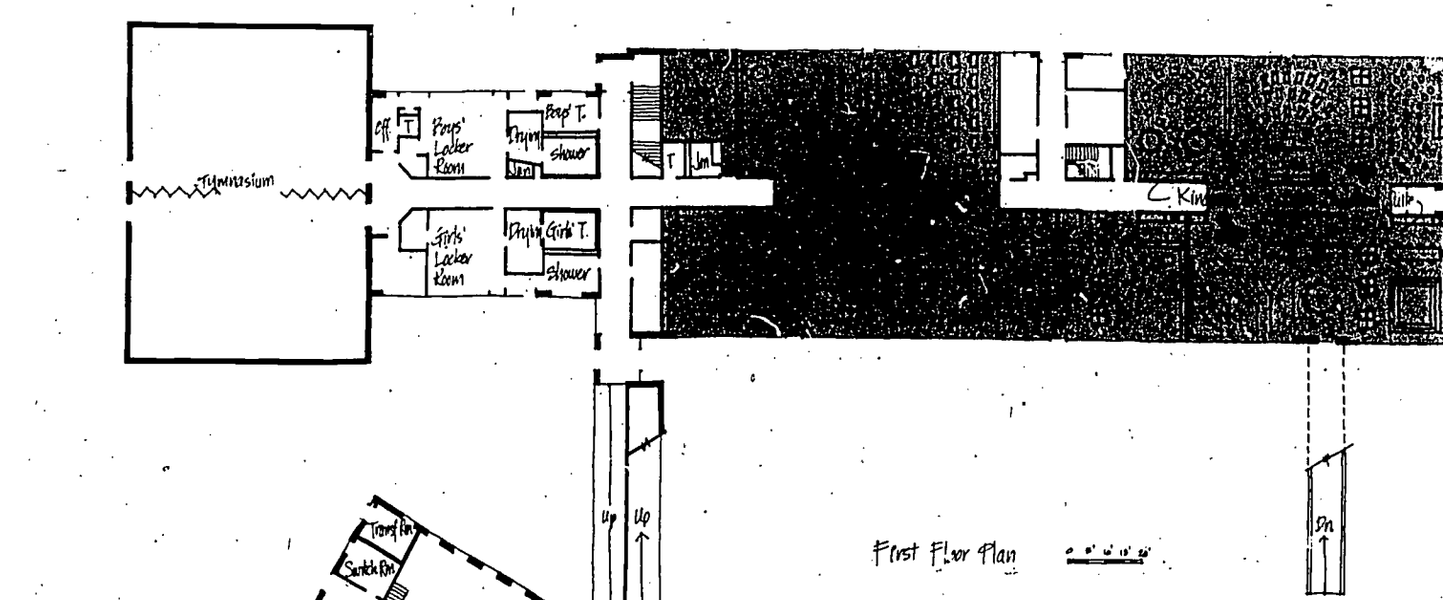
First Floor Plan



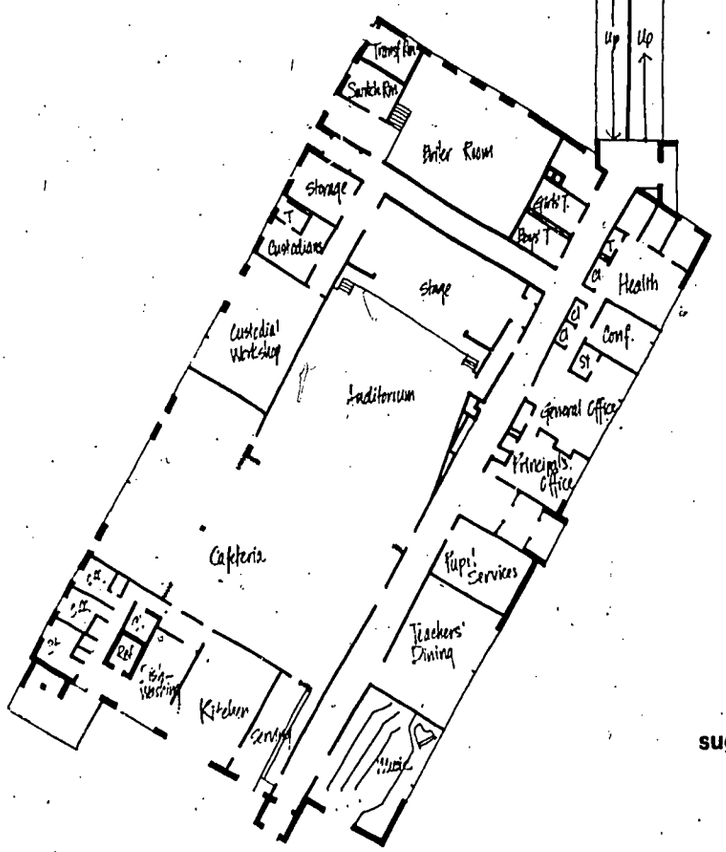
existing



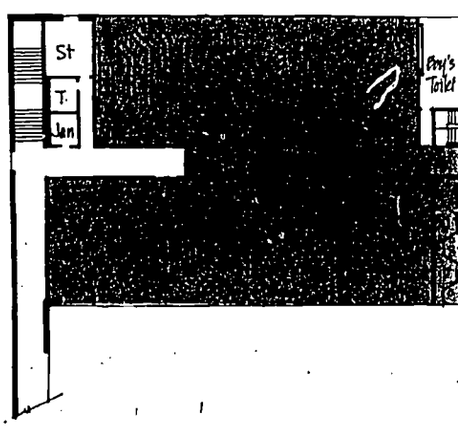
Second Floor Plan



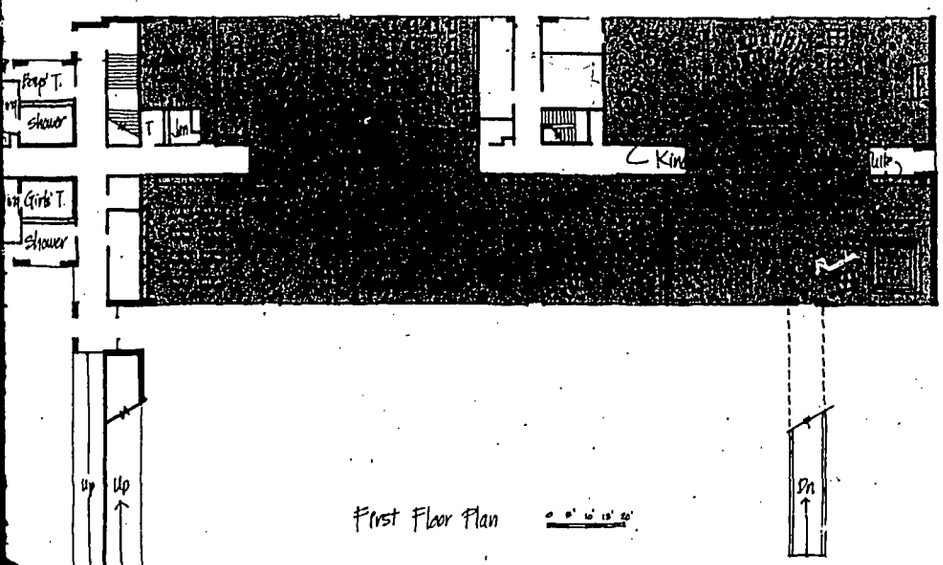
First Floor Plan



suggested

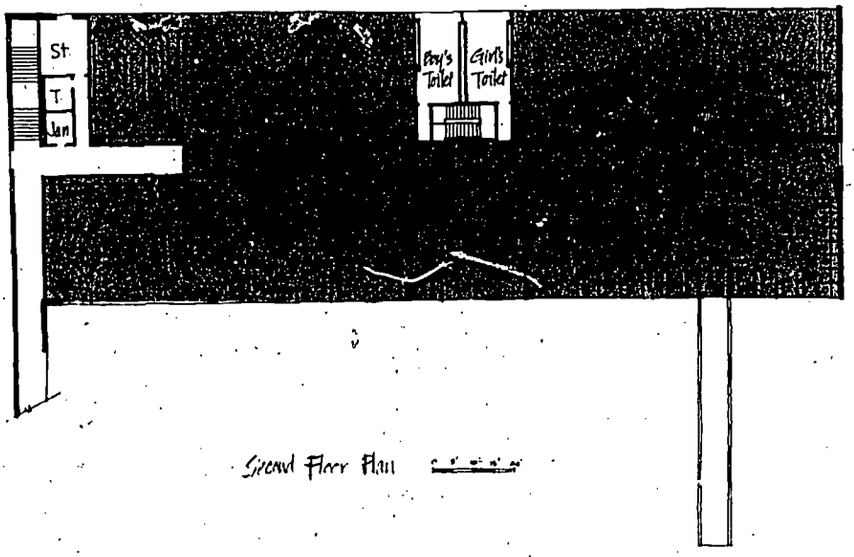


Second Floor Plan



First Floor Plan

remodeled

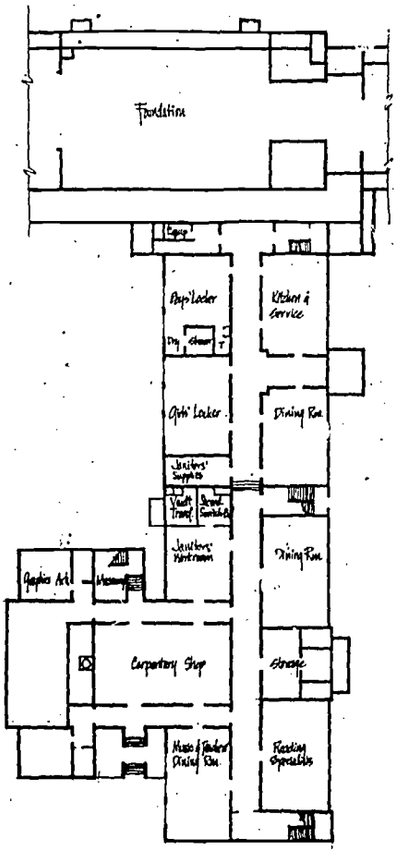


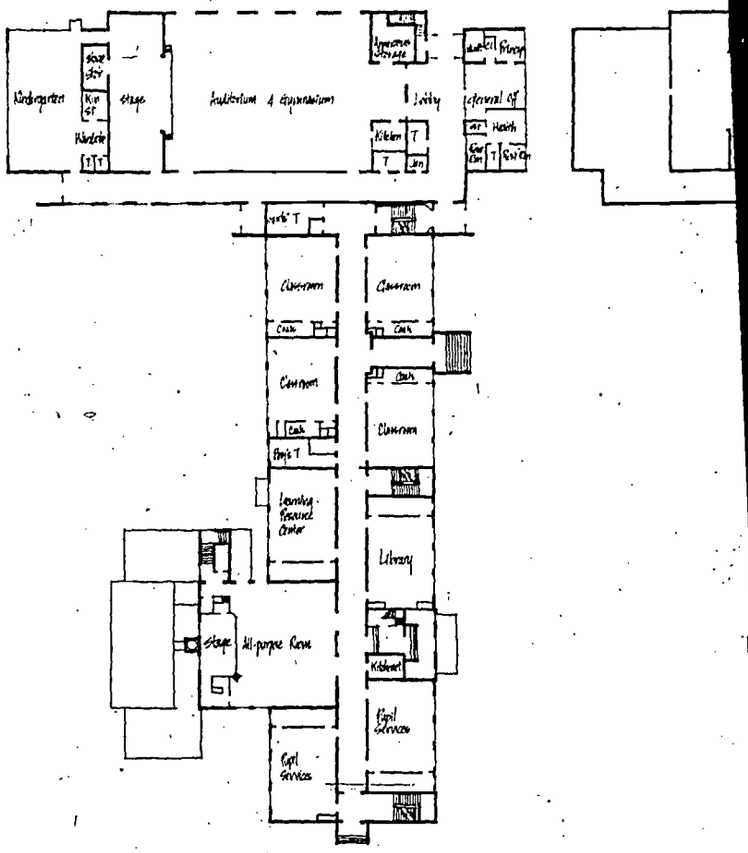
suggested

Second Floor Plan

florence e. smith elementary school

Smith is one of the Town's older schools having been constructed in 1915 with two additions subsequently provided in 1925 and 1953. It is a three story building consisting of twelve classrooms and one kindergarten room.



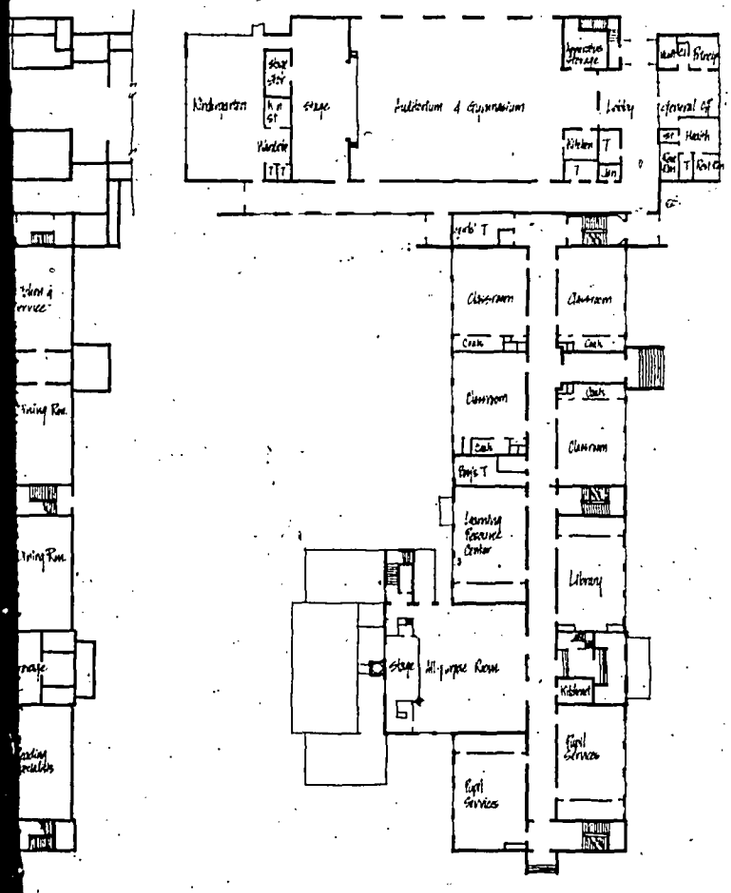


existing Basement Plan

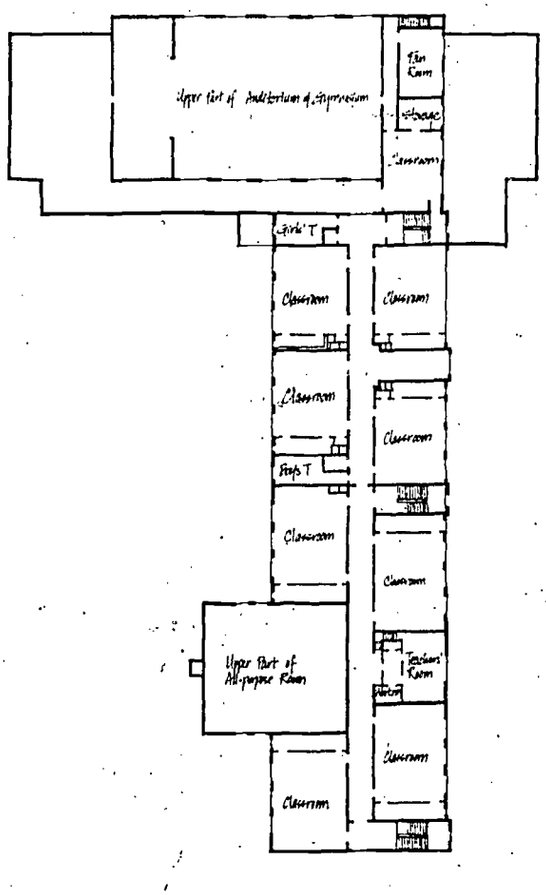
First Floor Plan

smith

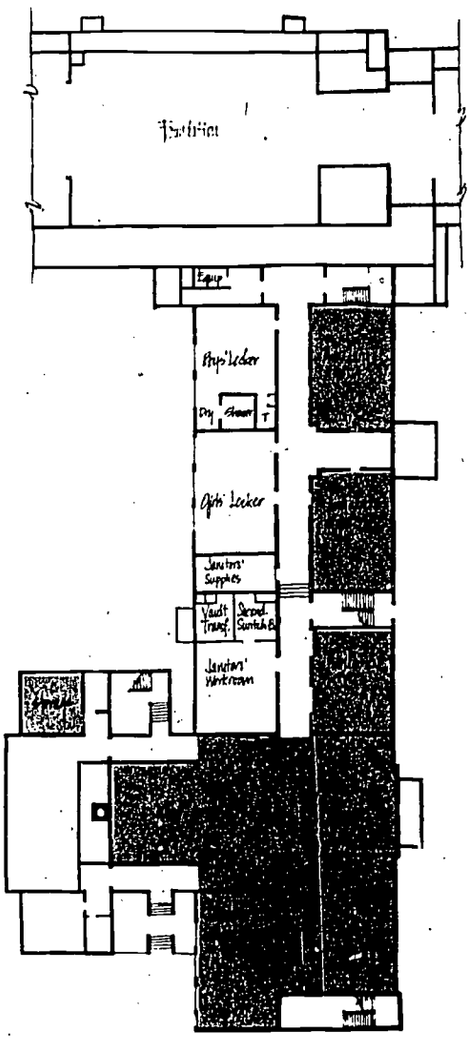
Smith is one of the Town's older schools having been constructed in 1915 with two additions subsequently provided in 1925 and 1953. It is a three story building consisting of twelve classrooms and one kindergarten room.



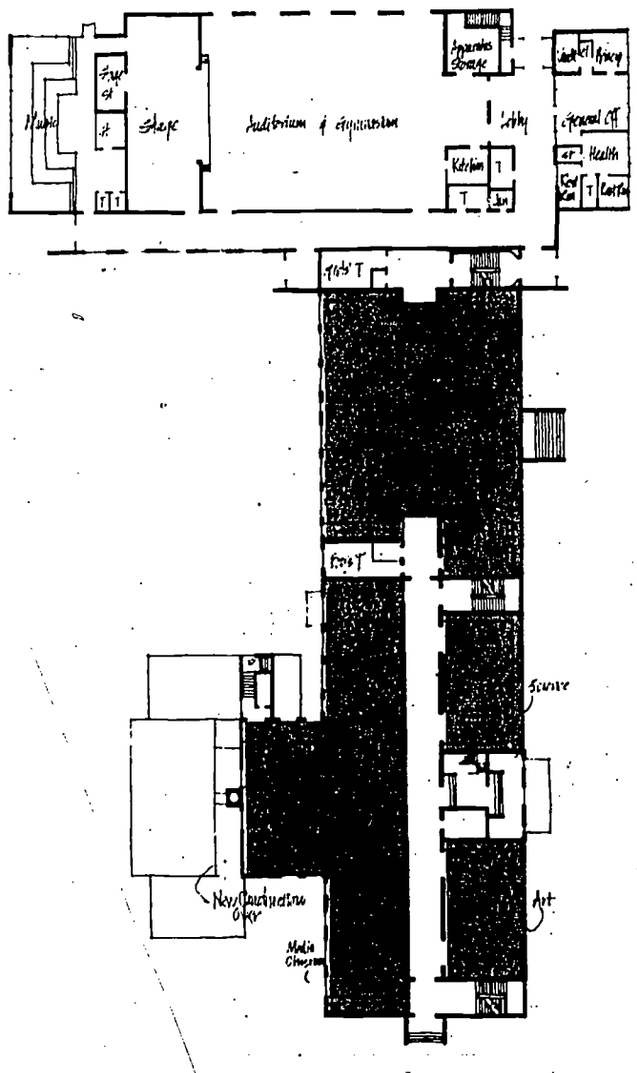
First Floor Plan



Second Floor Plan



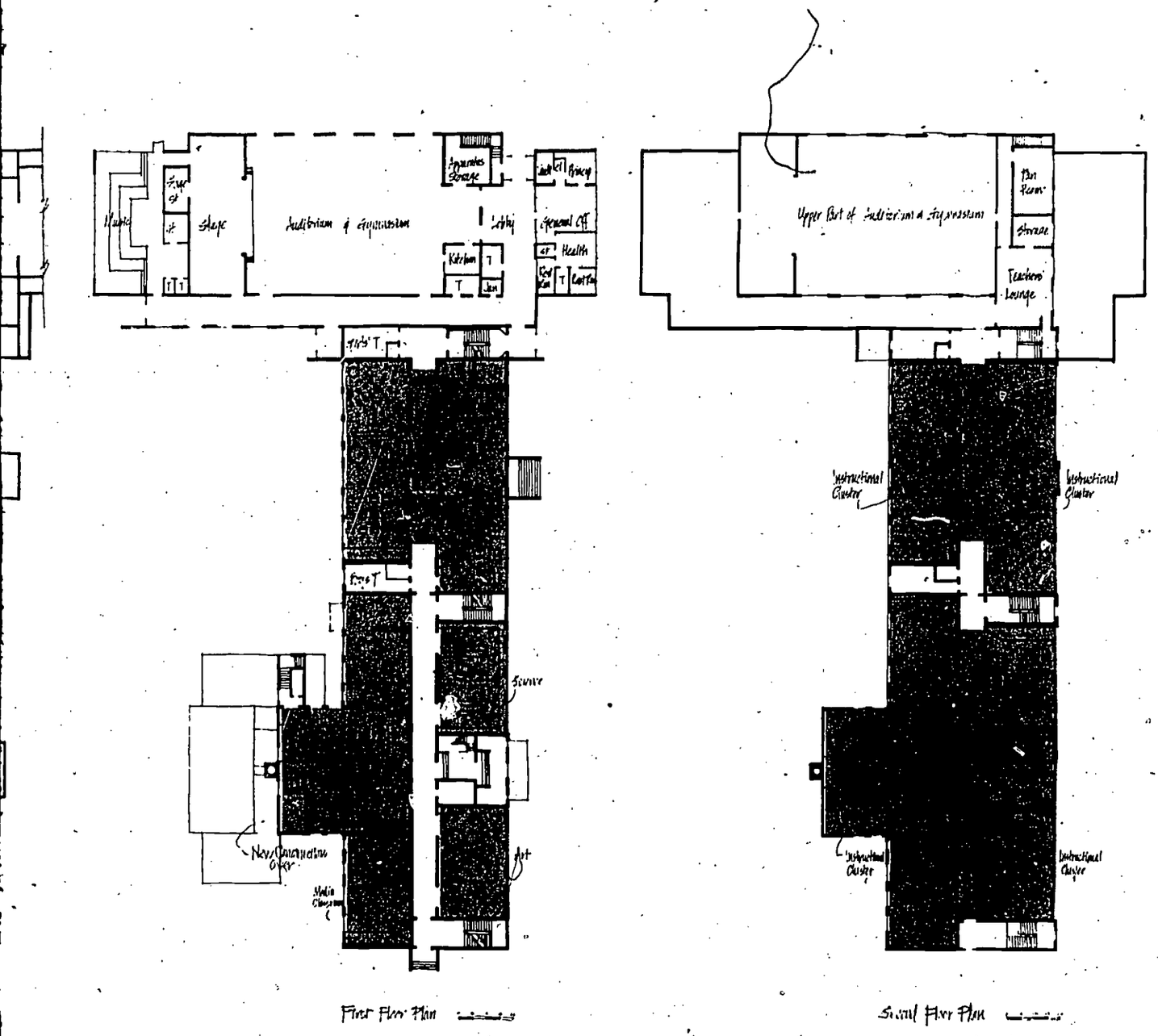
Basement Plan



First Floor Plan

remodeled

suggested

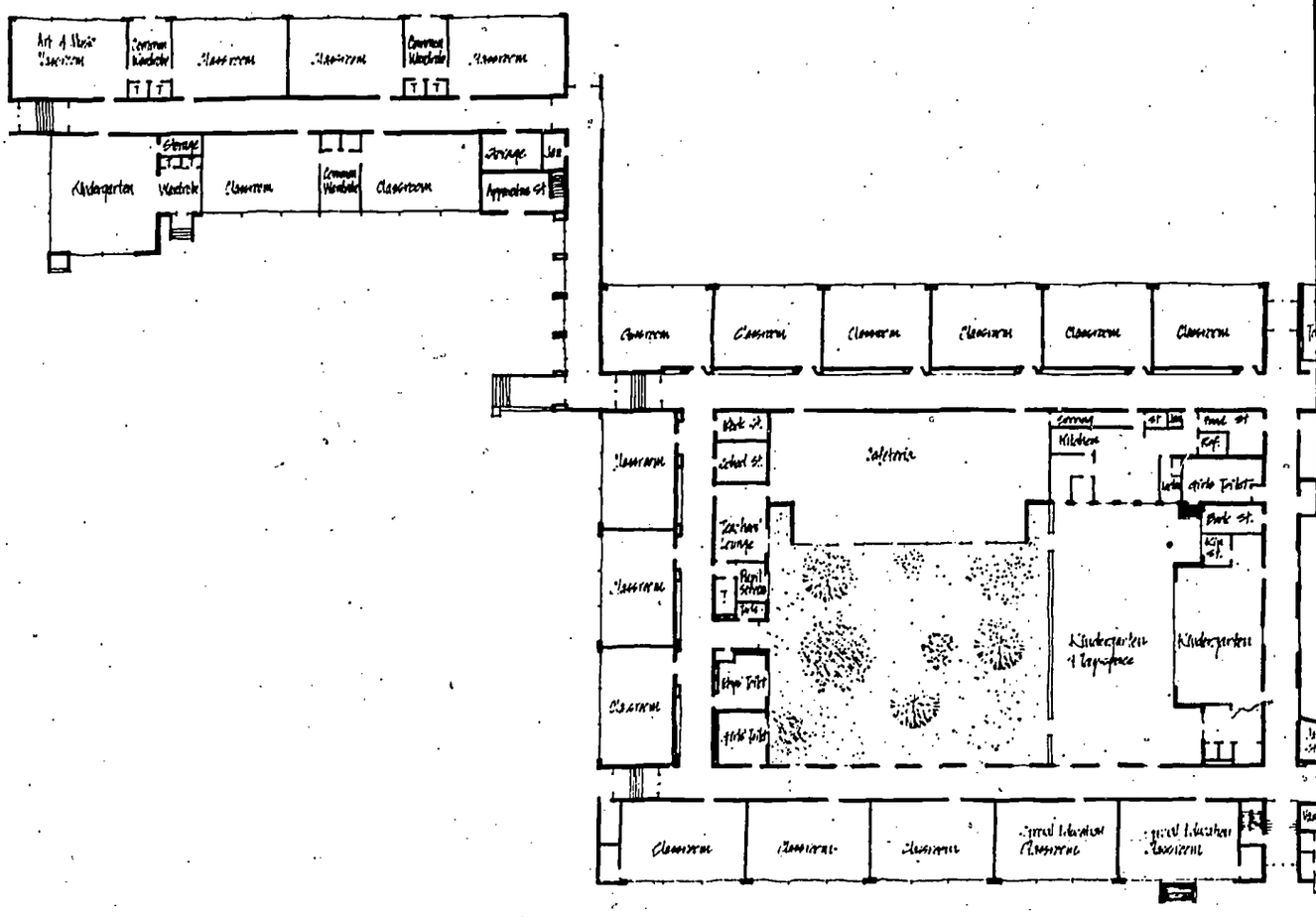


remodeled

suggested

webster hill elementary school

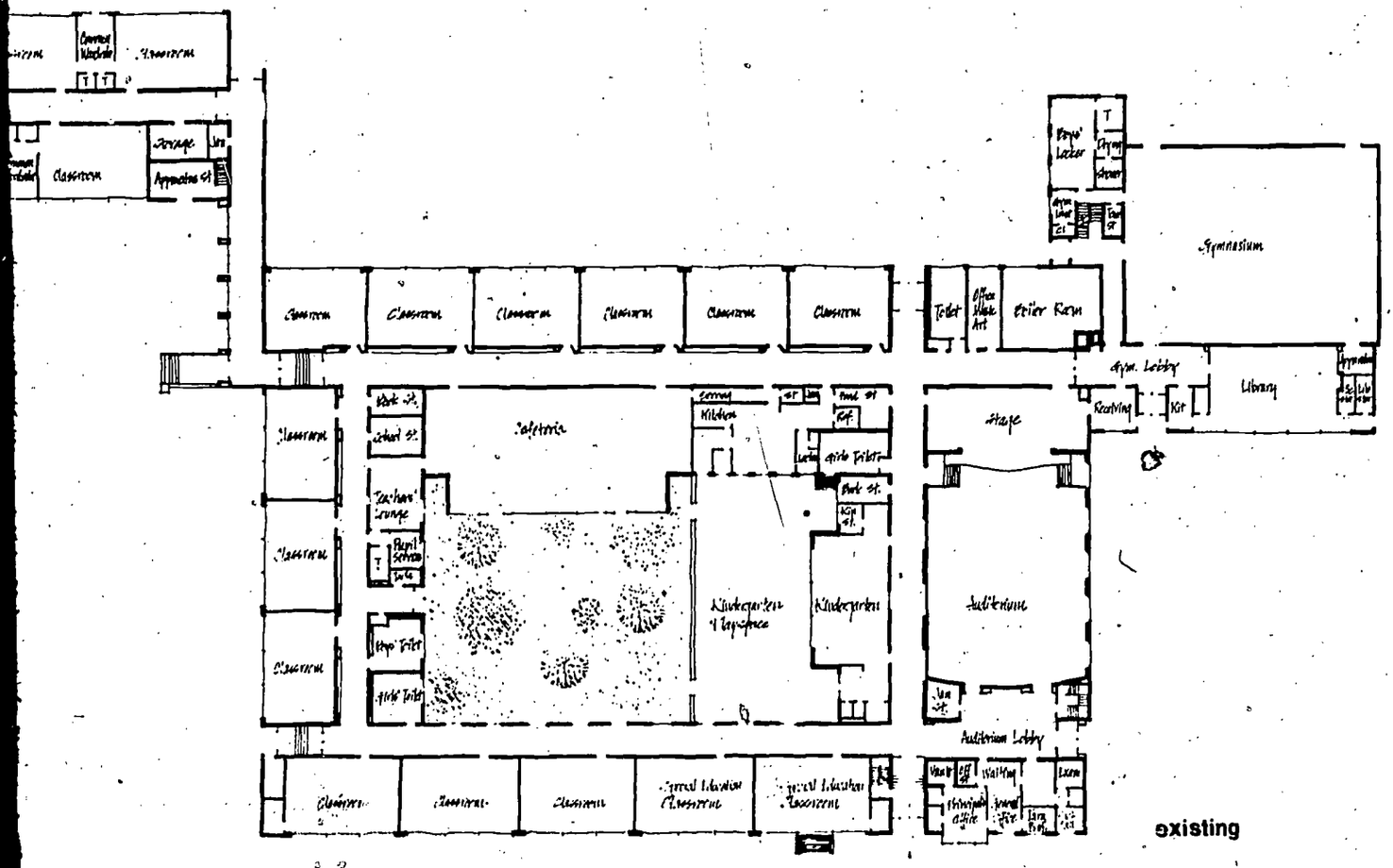
Webster Hill, constructed in 1949, with an addition in 1953, is a single story building consisting of seventeen classrooms and two rooms for kindergarten. In addition it includes two special education classrooms.



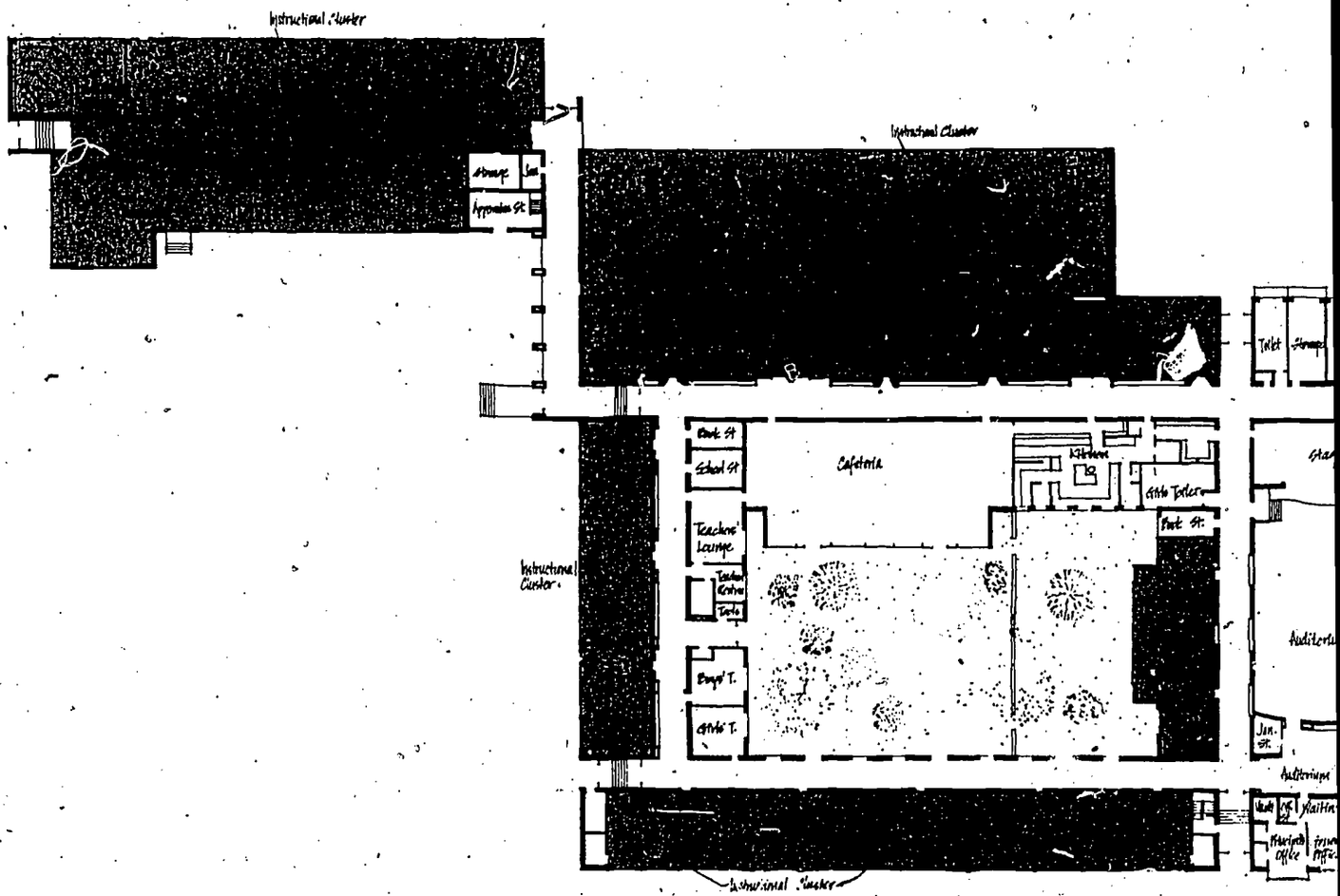
First Floor Plan

159

Webster Hill, constructed in 1949, with an addition in 1953, is a single story building consisting of seventeen classrooms and two rooms for kindergarten. In addition it includes two special education classrooms.



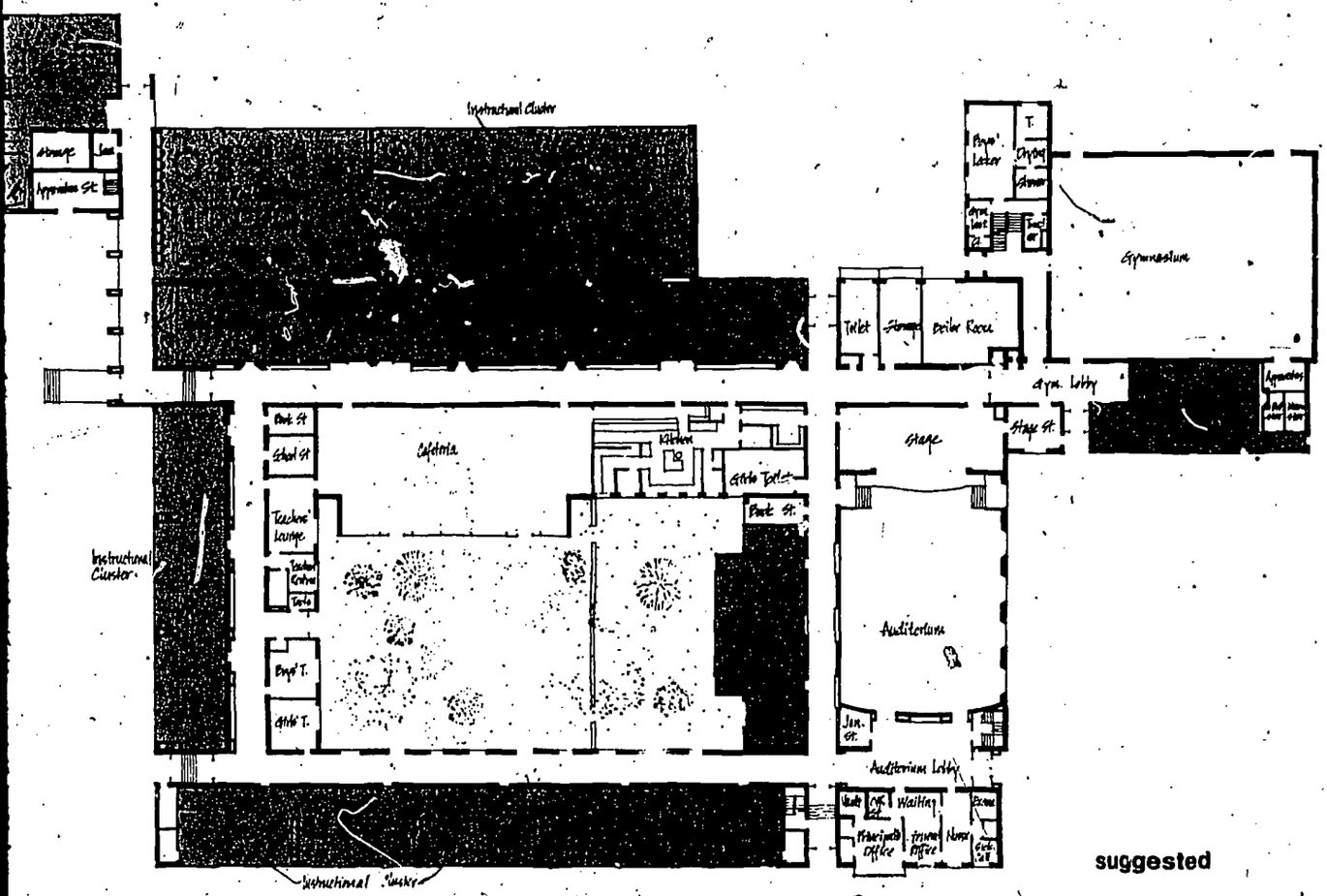
First Floor Plan



First Floor Plan

remodeled

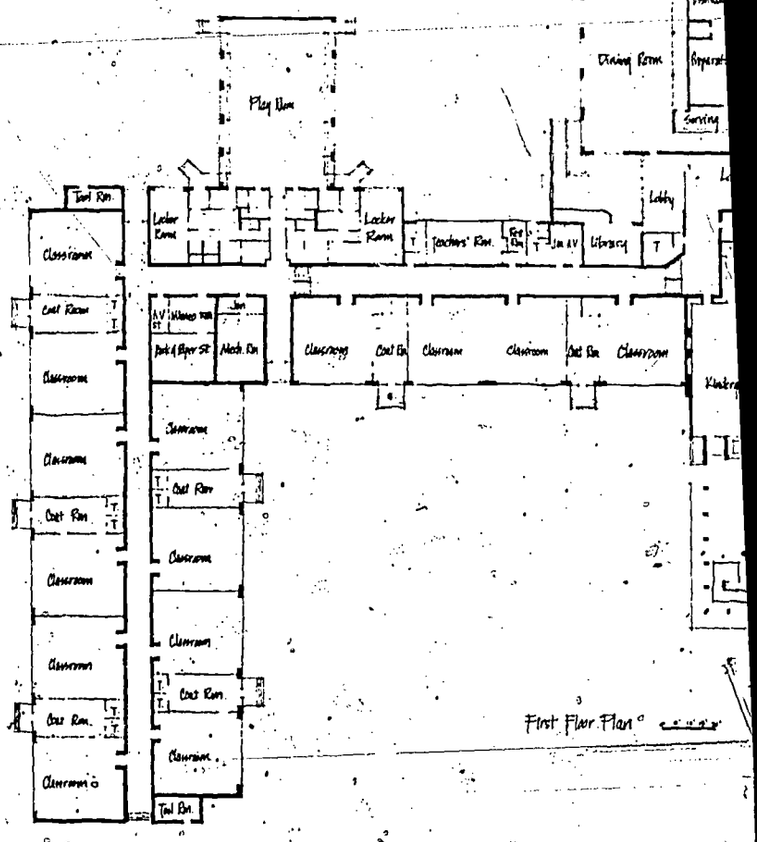
addition

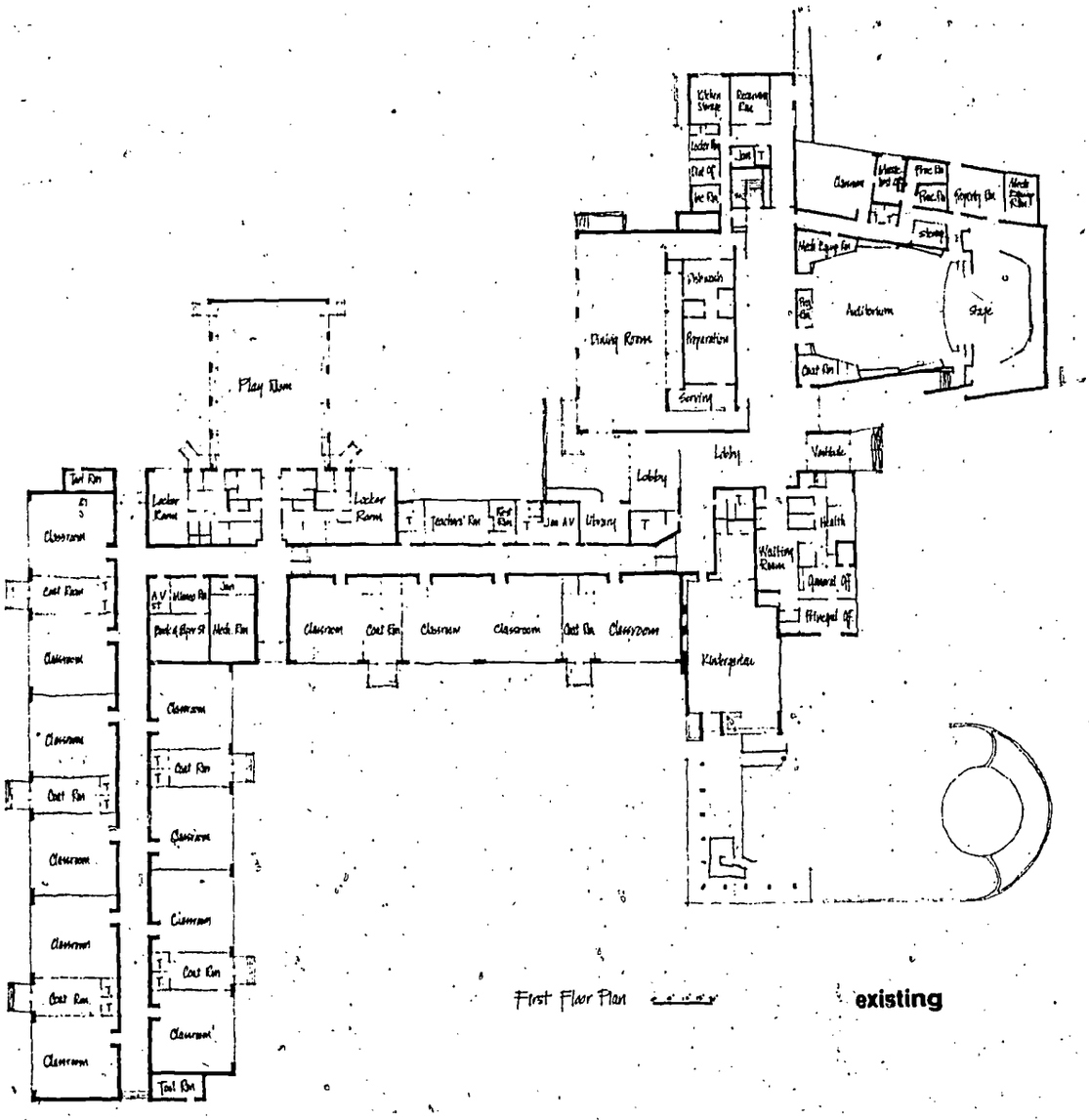


First Floor Plan

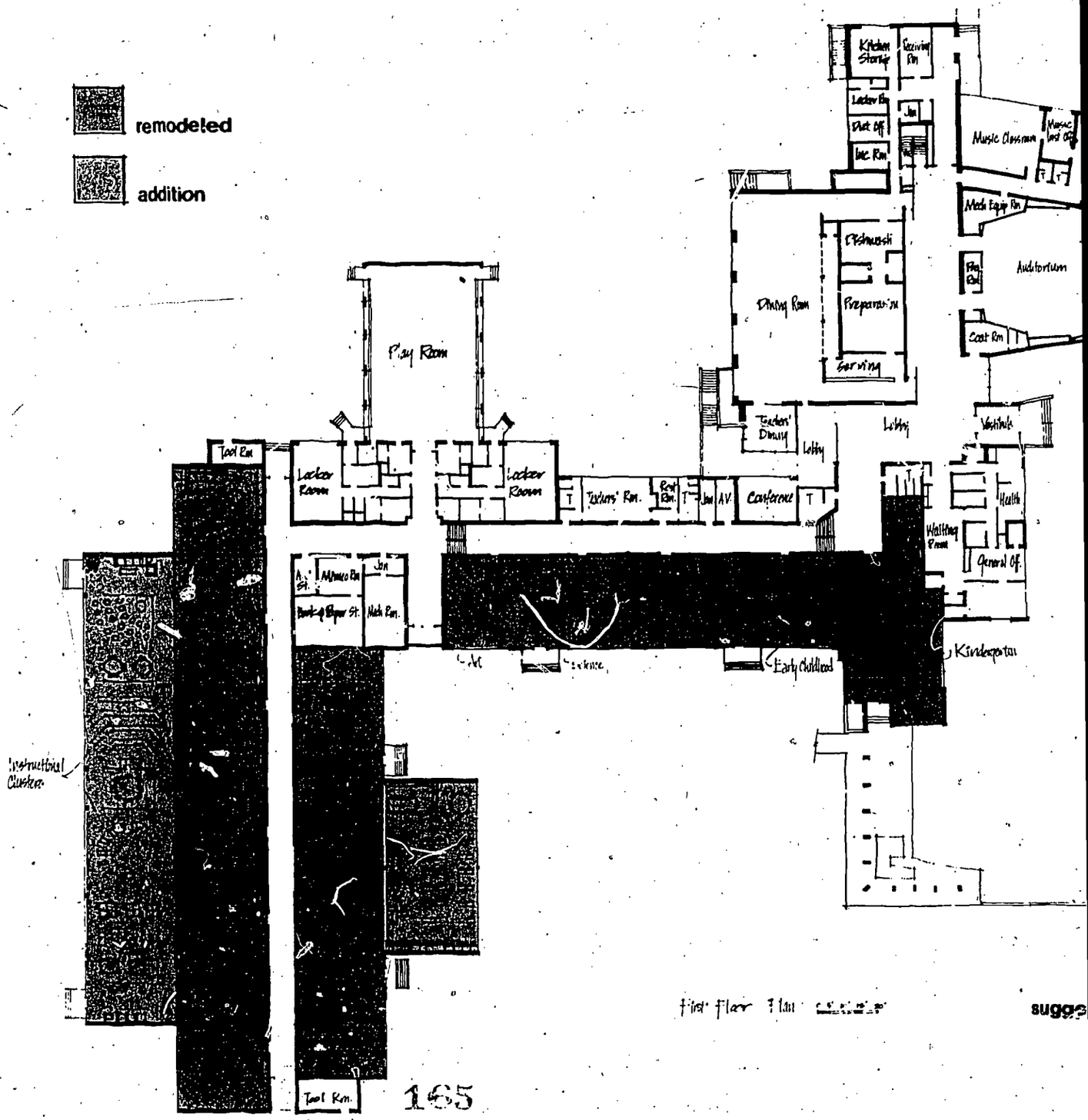
whiting lane elementary school

Built in 1954, Whiting Lane is a one story school consisting of fifteen classrooms and two rooms for kindergarten.

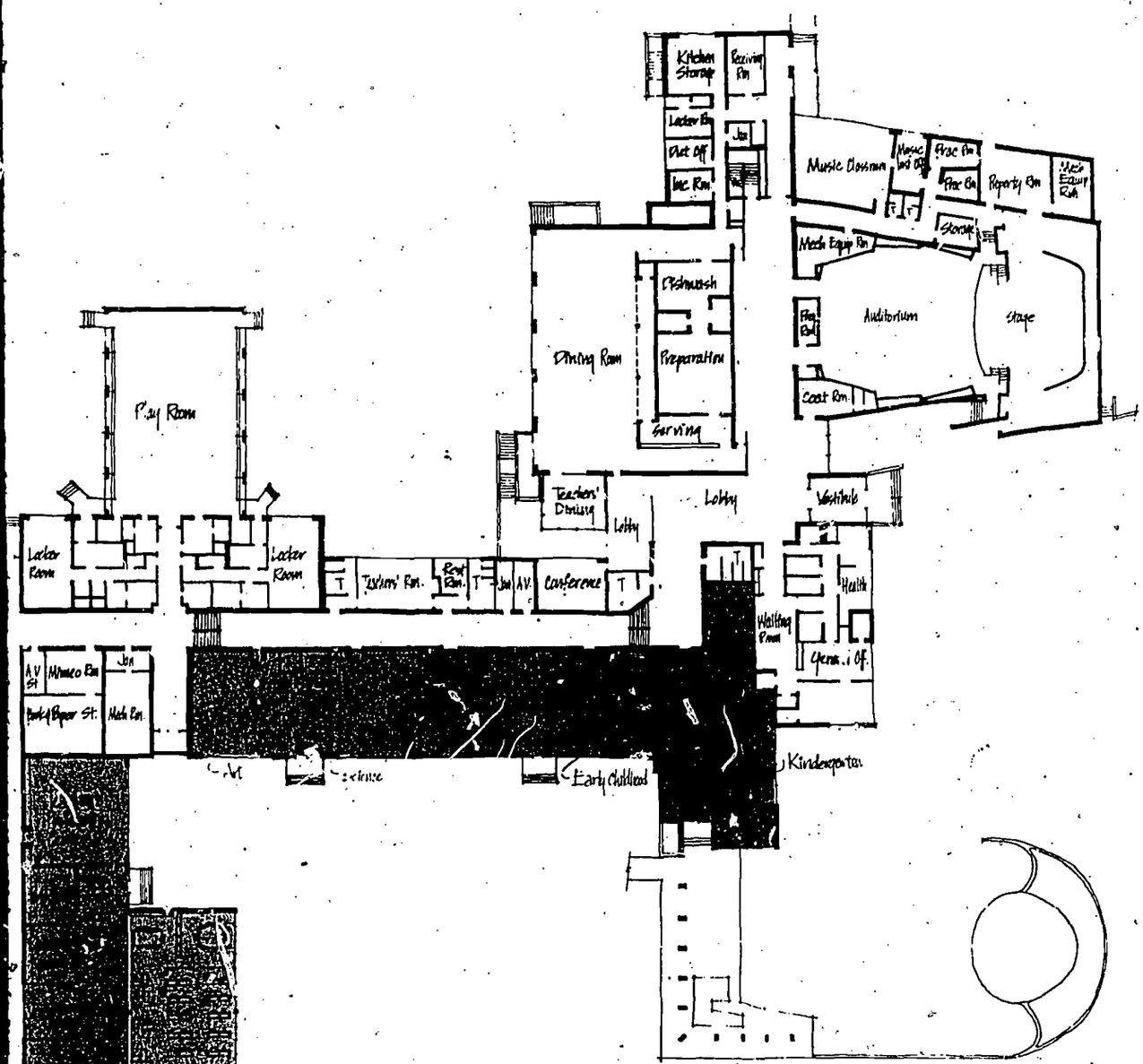




First Floor Plan — existing



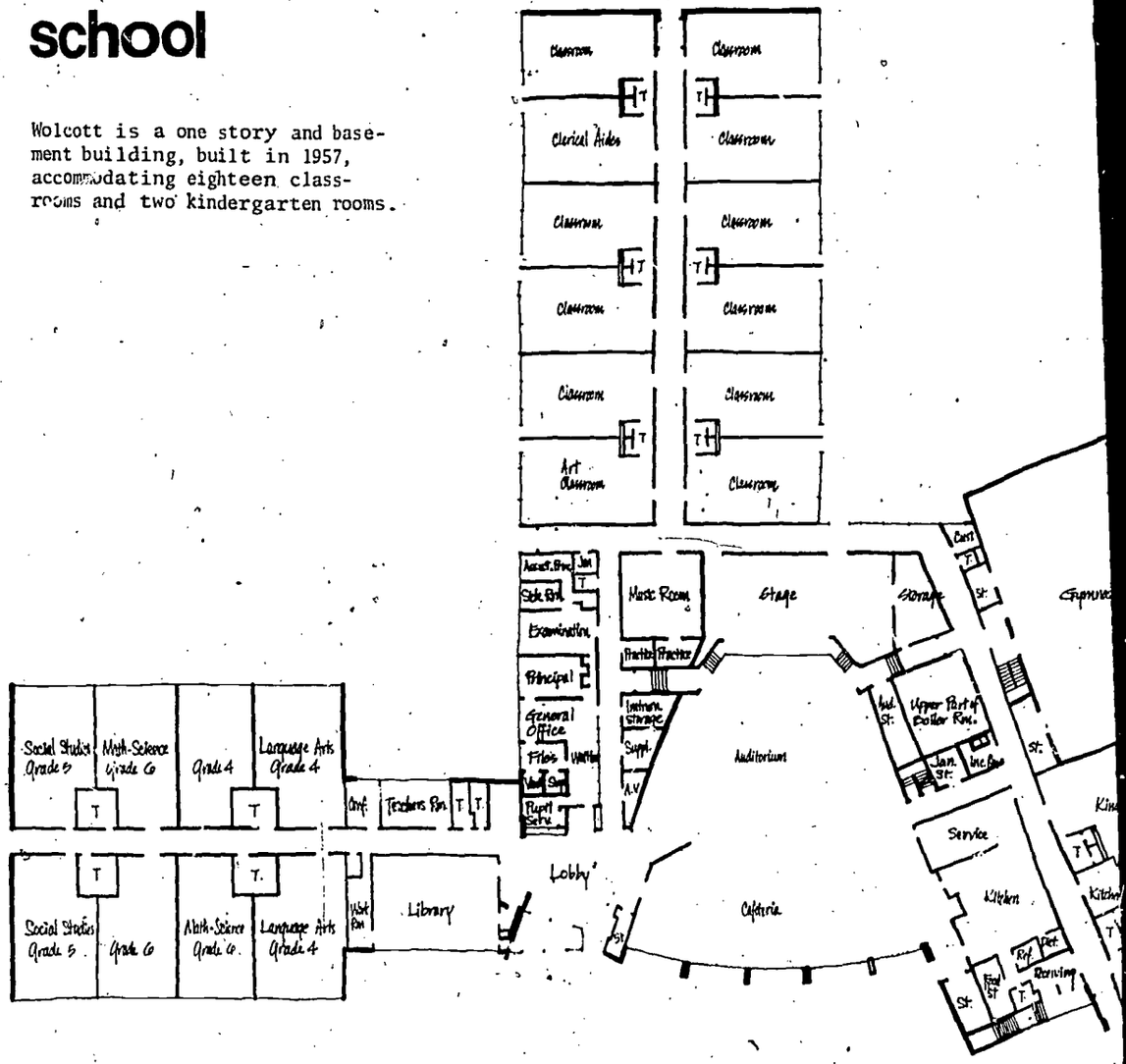
First Floor Plan



First floor plan suggested

henry a. wolcott elementary school

Wolcott is a one story and basement building, built in 1957, accommodating eighteen classrooms and two kindergarten rooms.



existing First Floor Plan

olcott

base-
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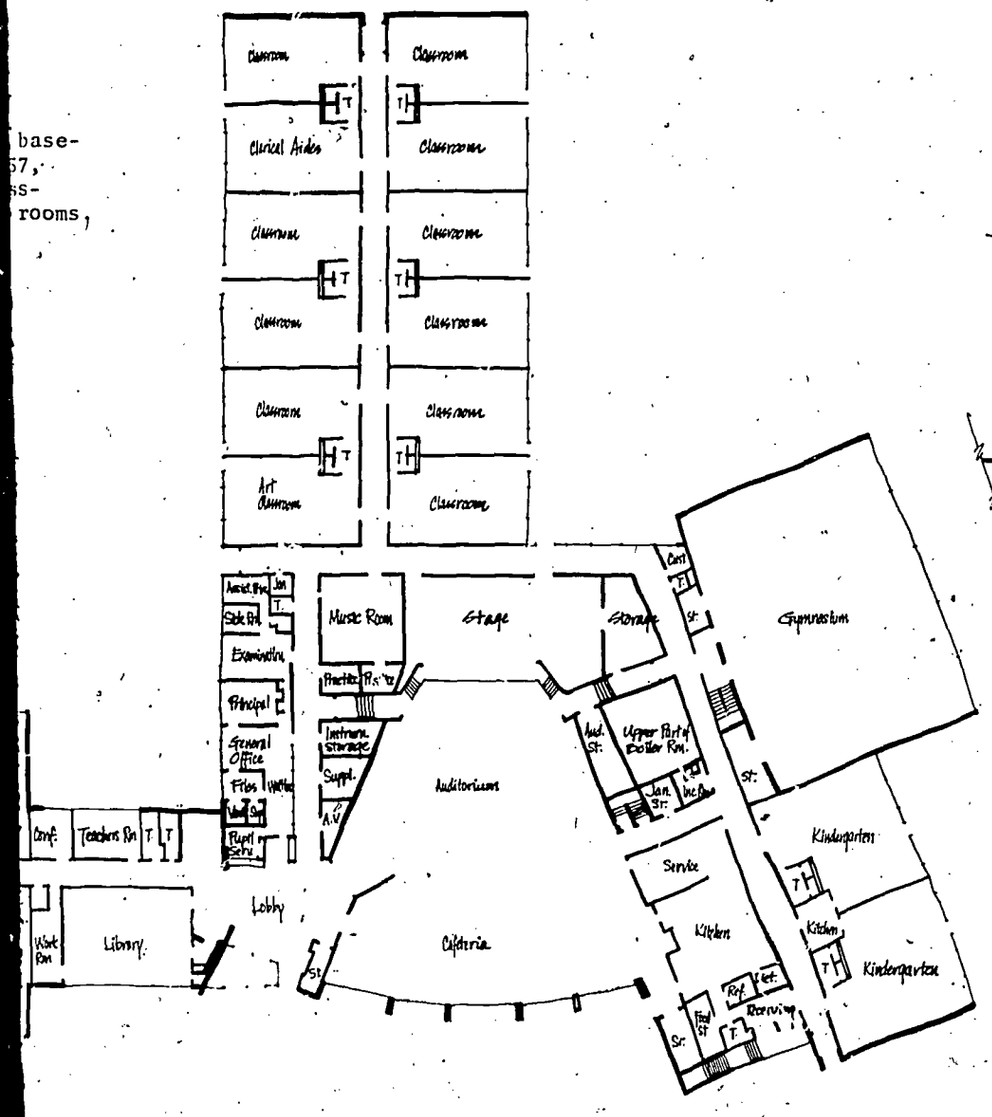
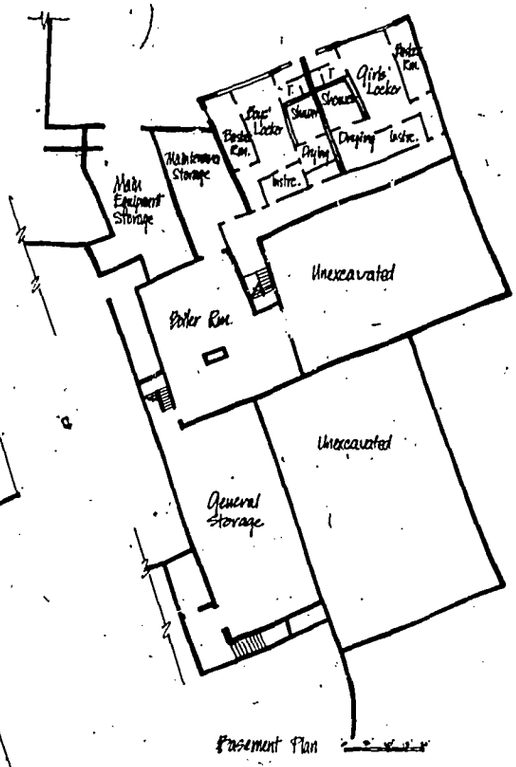
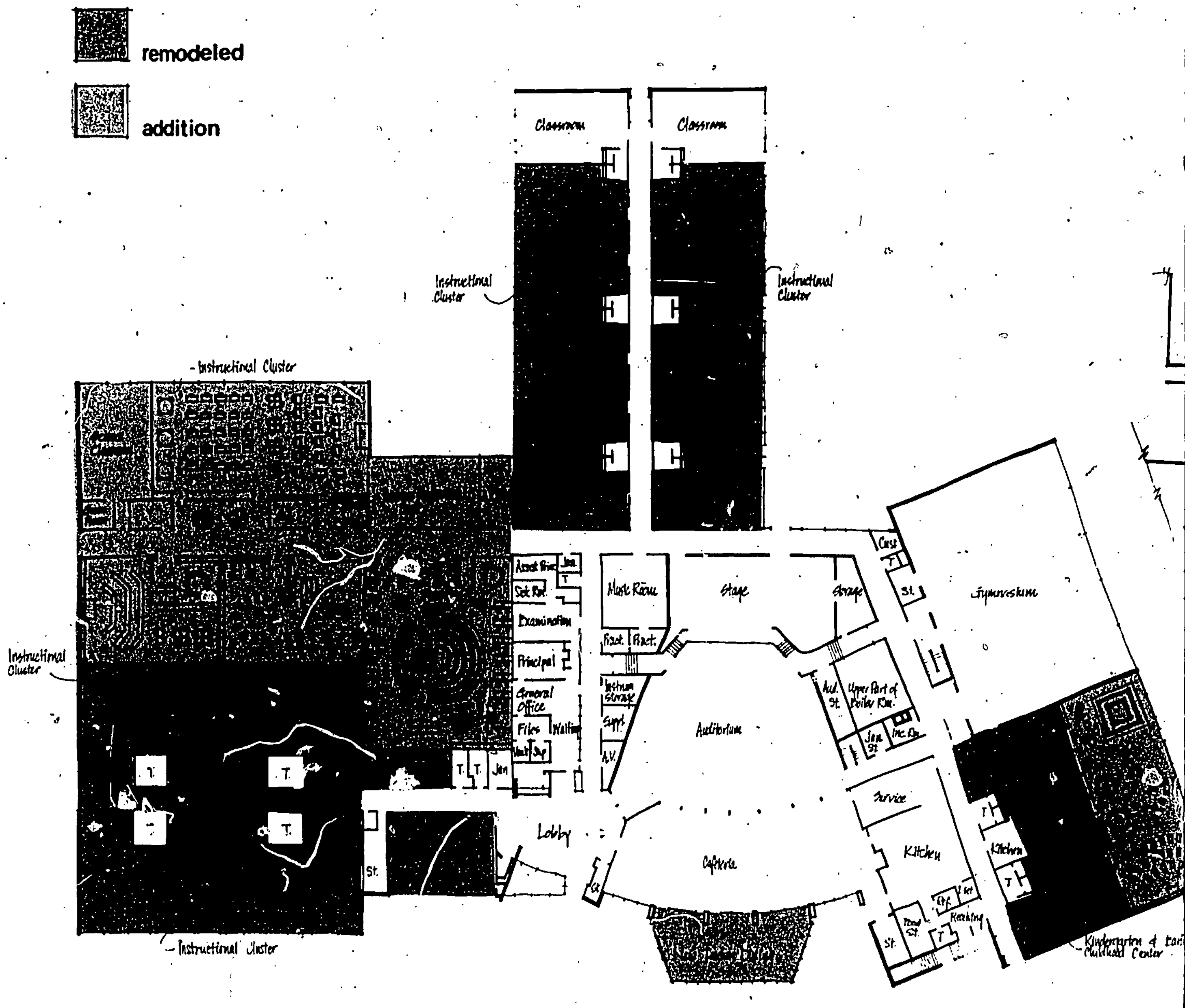
rooms,



First Floor Plan

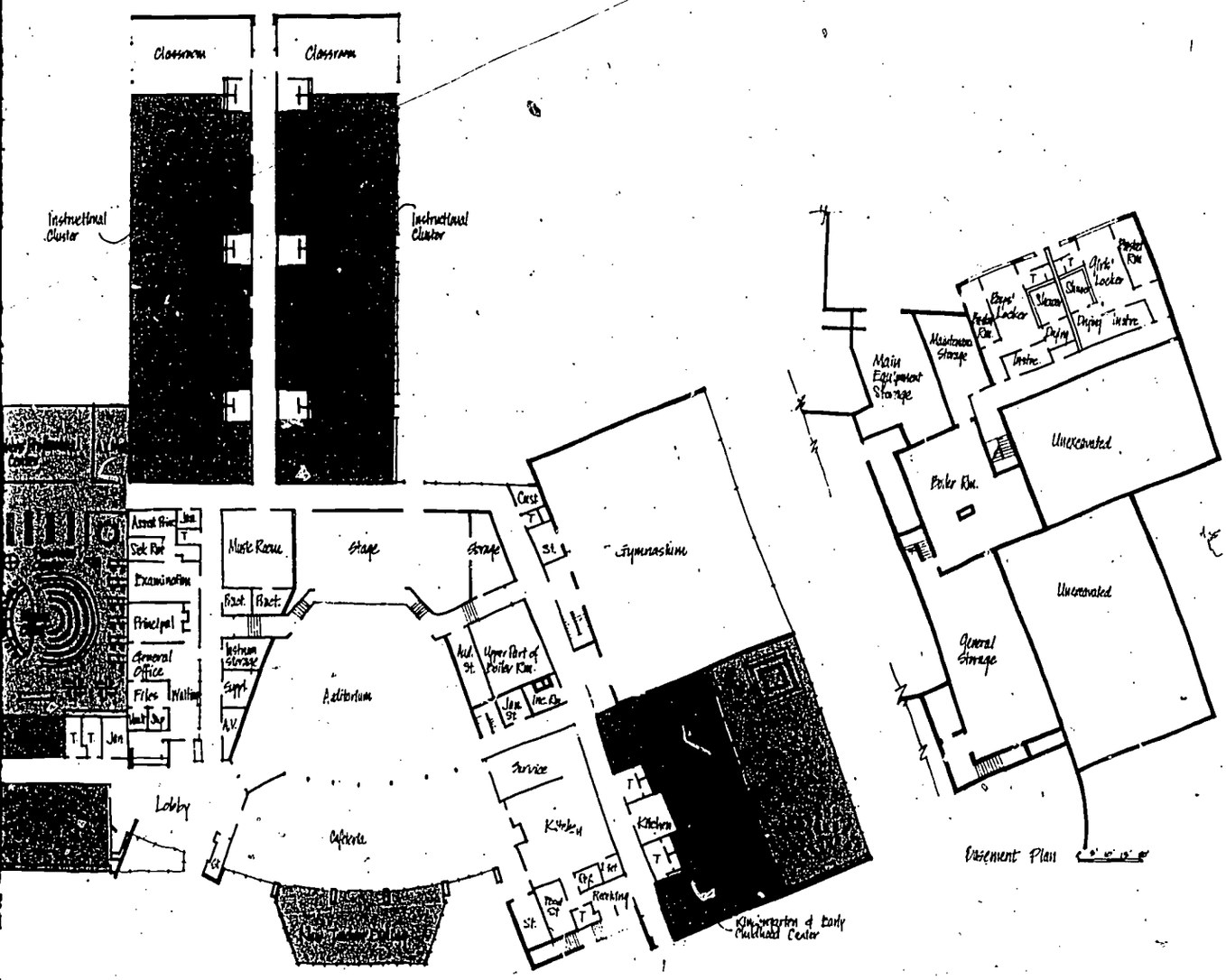


Basement Plan



suggested

First Floor Plan

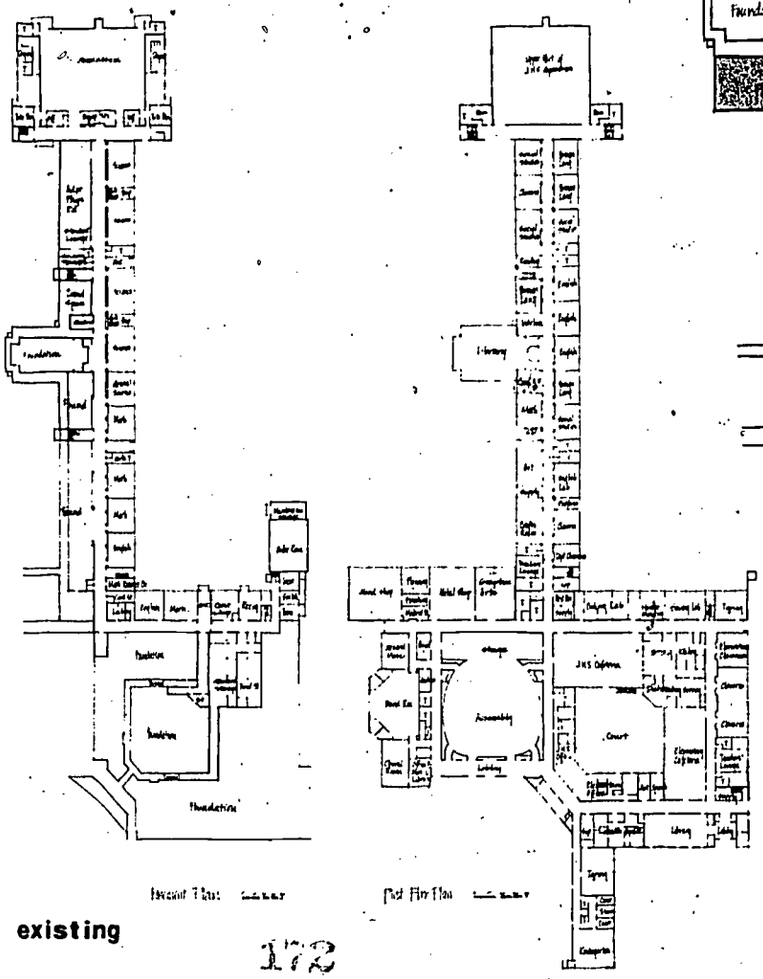

Classroom
Classroom
Instructional Cluster
Instructional Cluster
Music Room
Stage
Storage
Gymnasium
Auditorium
Lobby
Cafeteria
Service
Kitchen
Kitchen
Principal
General Office
Examination
Boiler Rm.
Upper Part of Boiler Rm.
Kindergarten & Early Childhood Center
Main Equipment Storage
Maintenance Storage
Unexcavated
Unexcavated
Boiler Rm.
General Storage
Girls' Locker
Boys' Locker
Shower
Shower
Drying
Drying
Instr.
Instr.
Basement Plan
First Floor Plan

junior high schools

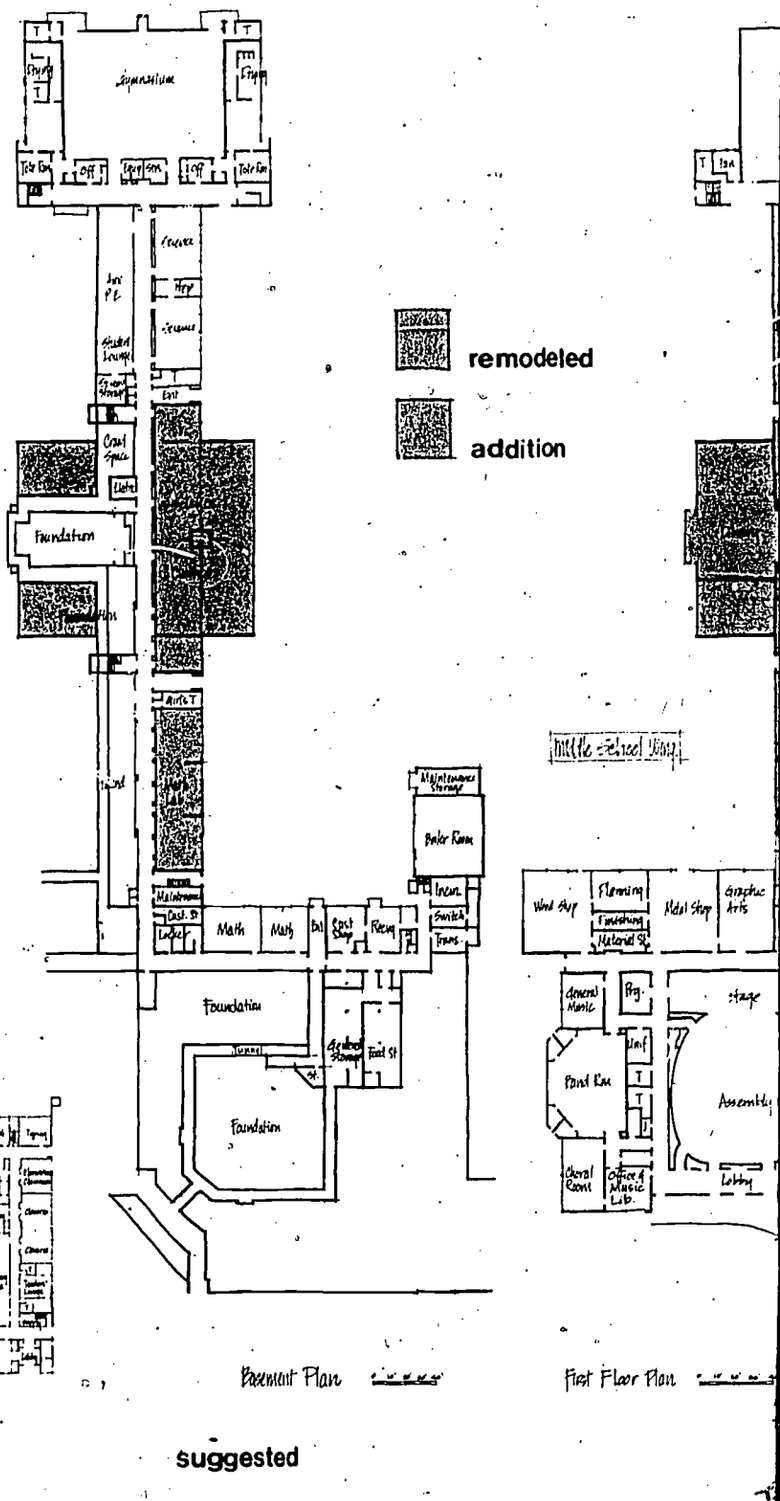
king philip
alfred plant
sedgwick
james talcott

king philip junior high school

King Philip was built in 1955 as a junior high school and an elementary school. The junior high school wing is a one-story-and-basement structure and consists of thirty-eight classrooms. Instructional spaces include academic classrooms, science laboratories, shops, art and music areas.



existing



suggested

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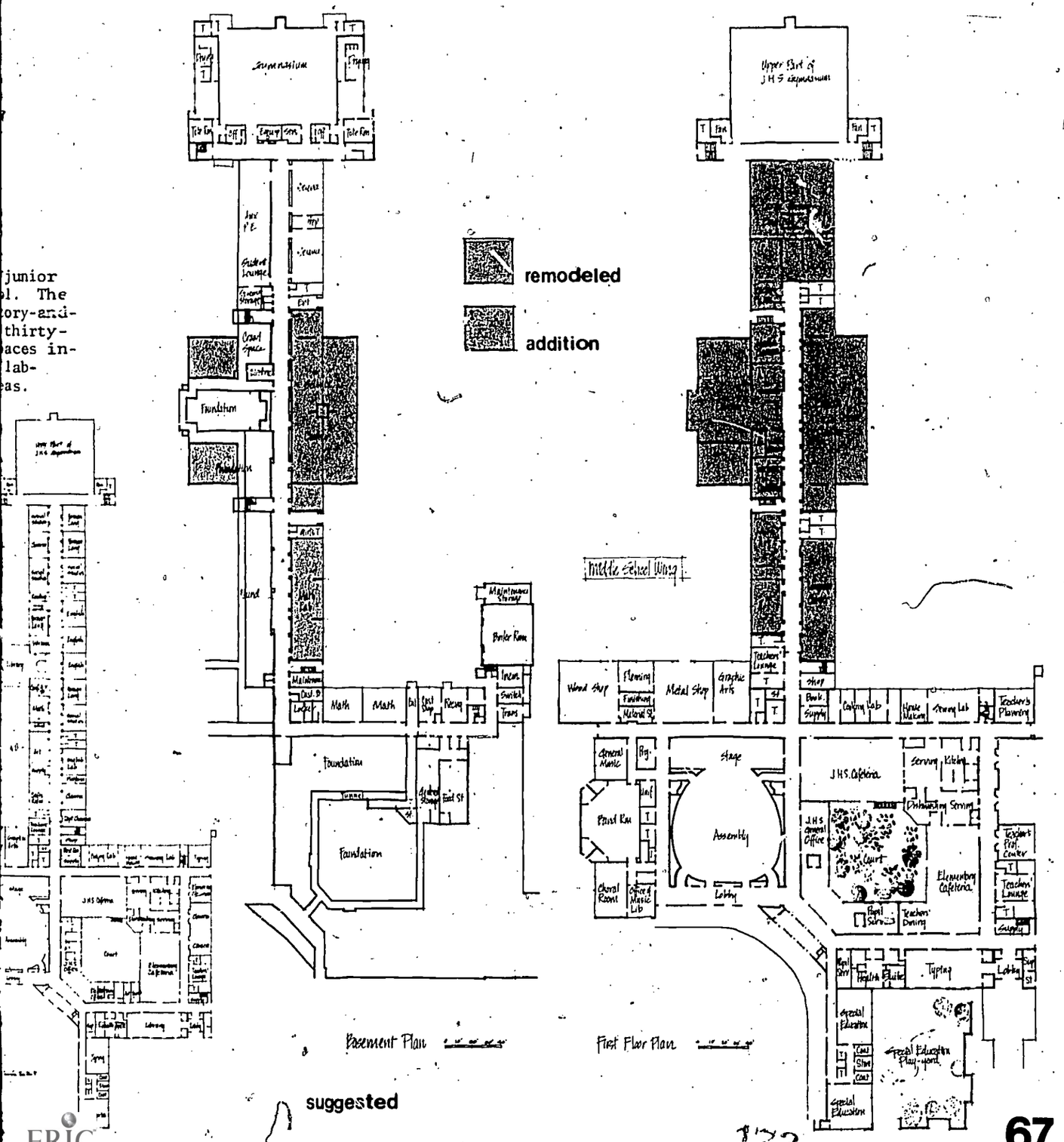
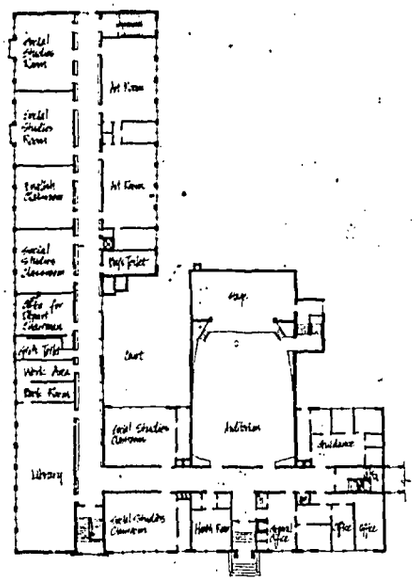


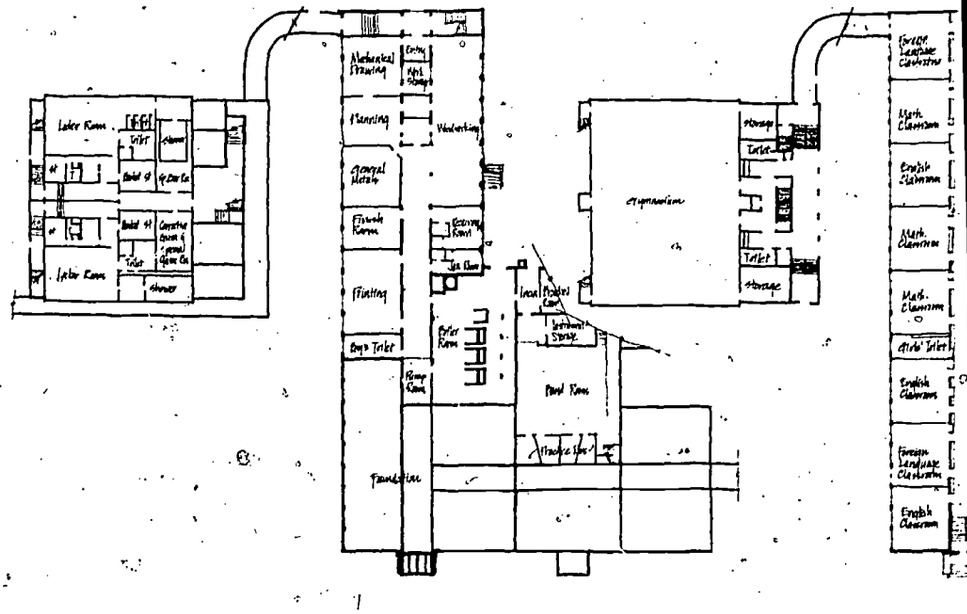
alfred plant junior high school

The original four story building of this school was constructed in 1922 and was followed by two additions built in 1929 and 1954. Plant has thirty-two classrooms including academic spaces, science laboratories, shops, art and music areas.

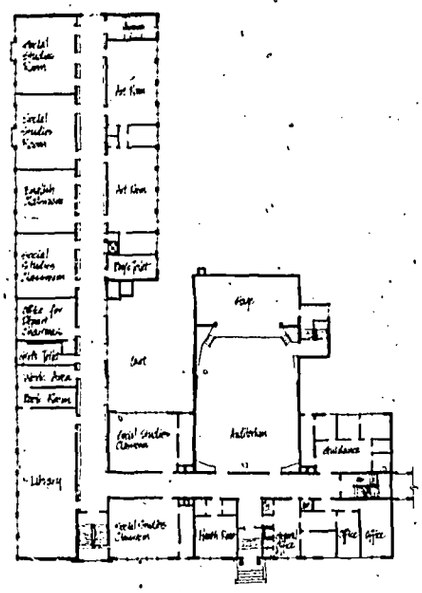


existing

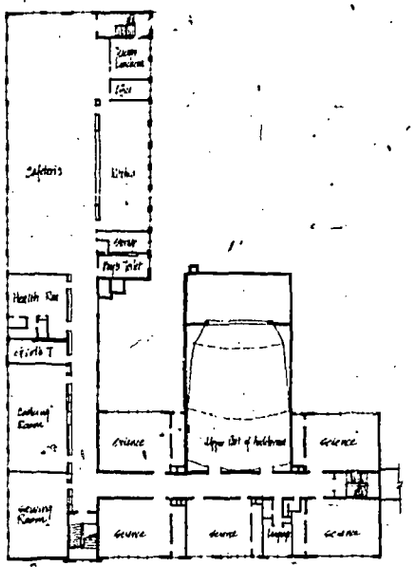
First Floor Plan



Basement Plan

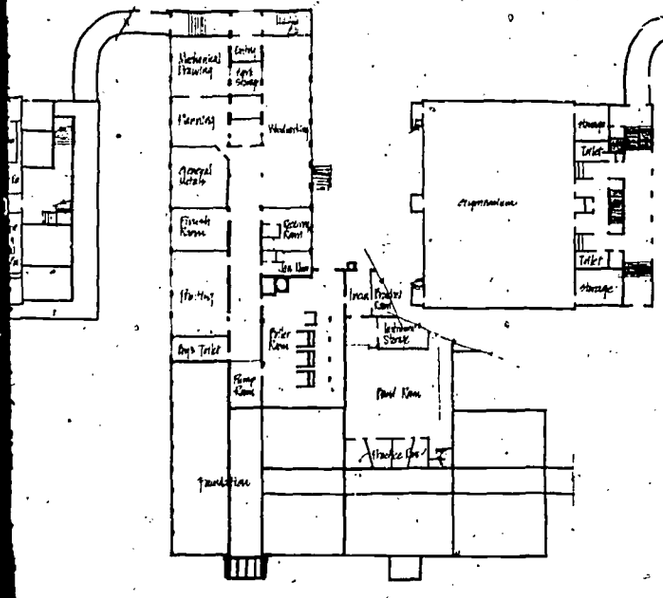


First Floor Plan

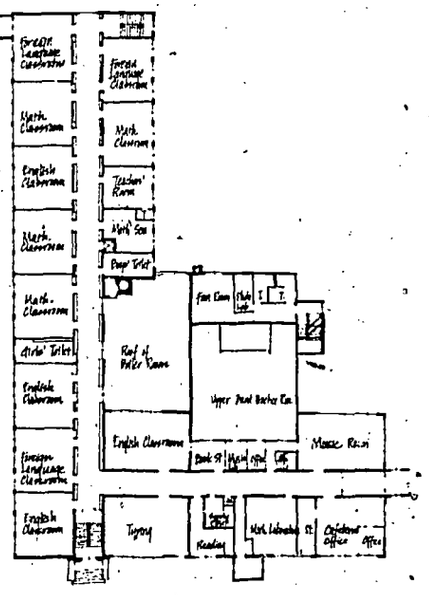


Second Floor Plan

isting



Basement Plan

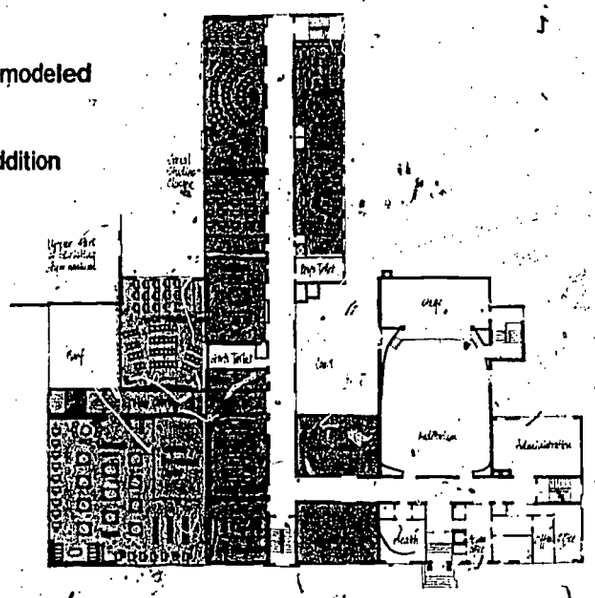


Ground Floor Plan

3.5

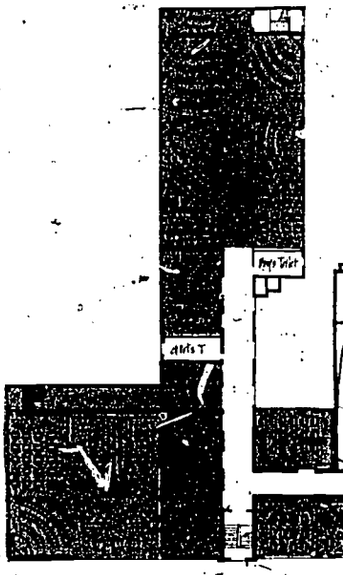
remodeled

addition

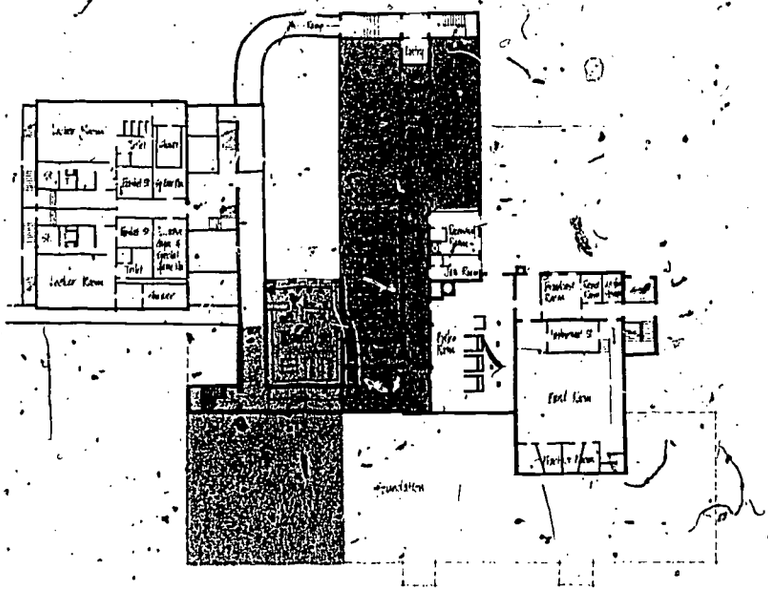


First Floor Plan

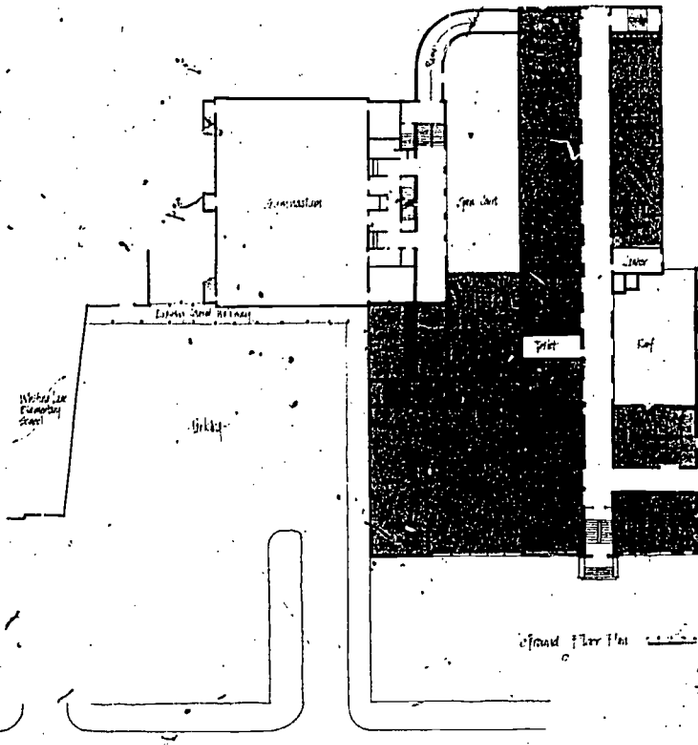
suggested



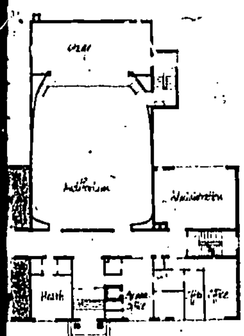
Second Floor Plan



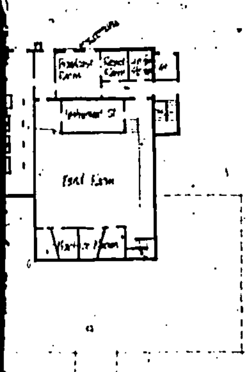
Basement Plan



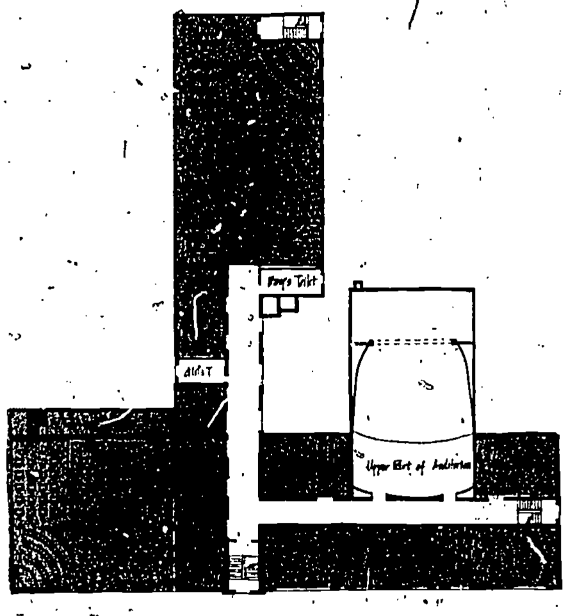
Ground Floor Plan



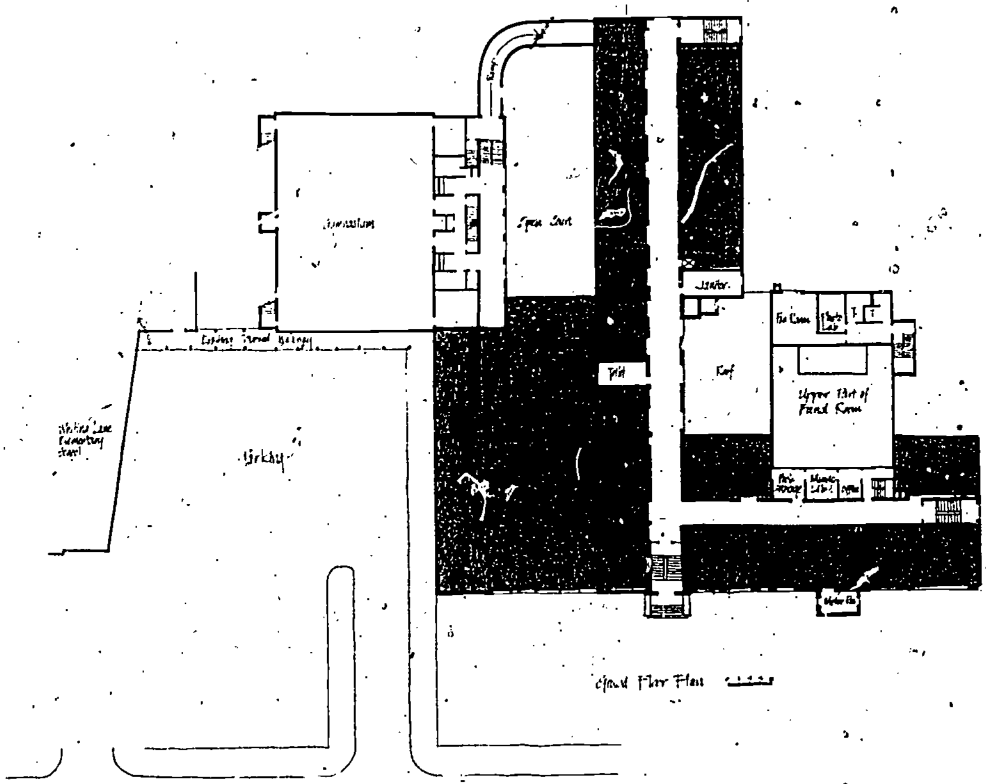
Floor Plan



suggested



Second Floor Plan



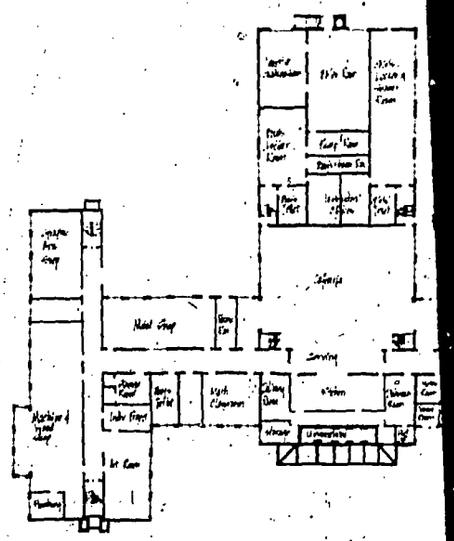
Ground Floor Plan

ERIC

sedgwick junior high school

Sedgwick is a three story building built in 1931 with an addition dating from 1957. Thirty-seven instructional spaces accommodate academic classrooms, science laboratories, shops, art and music areas.

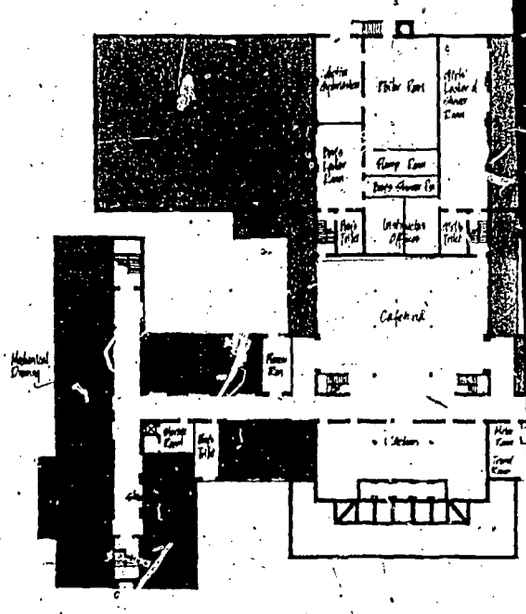
existing



remodeled

addition

suggested



uilding
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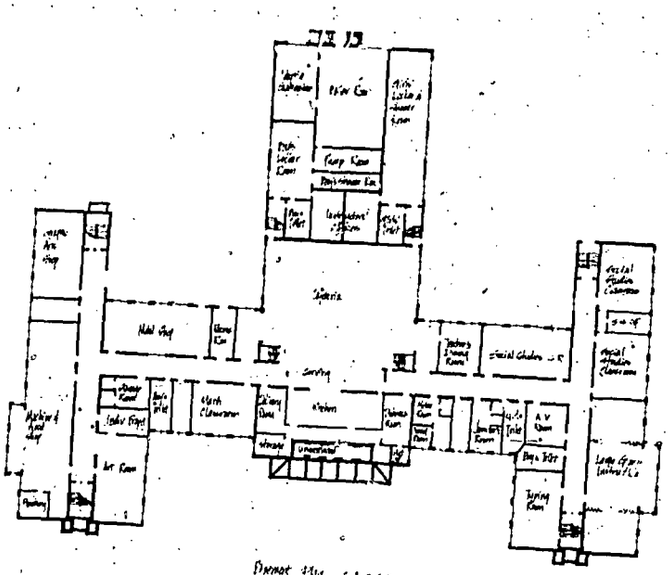
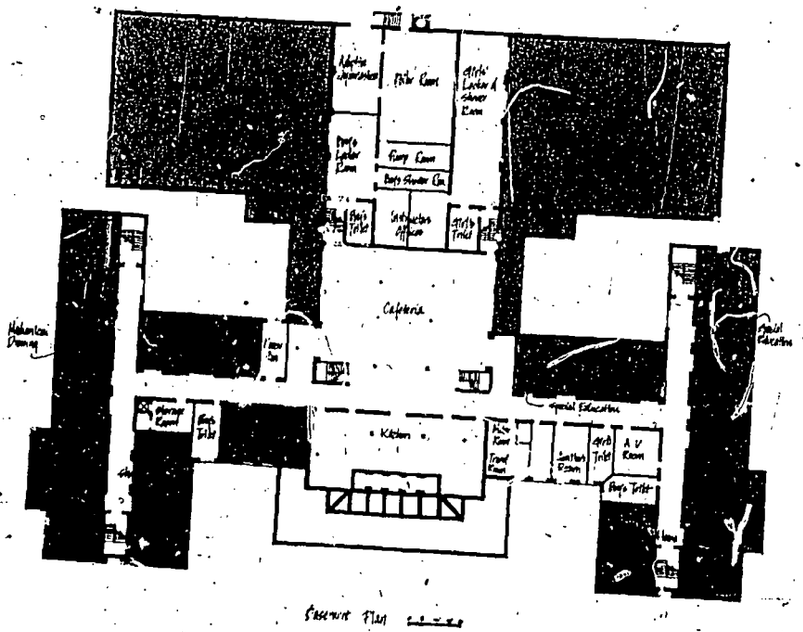
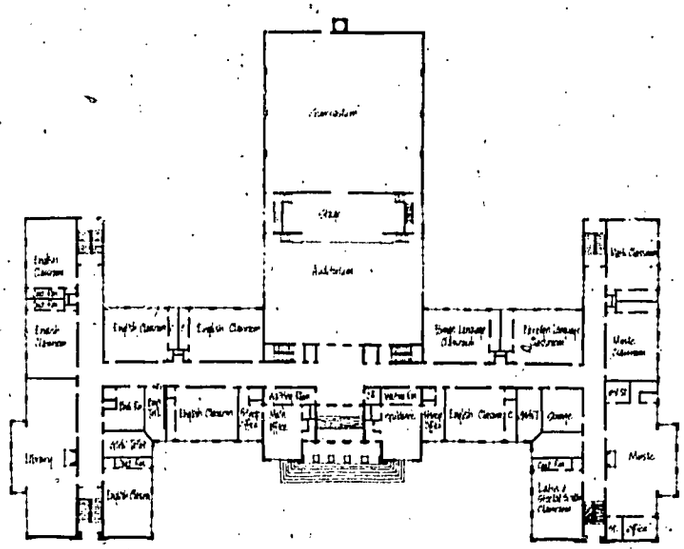
, art and

existing



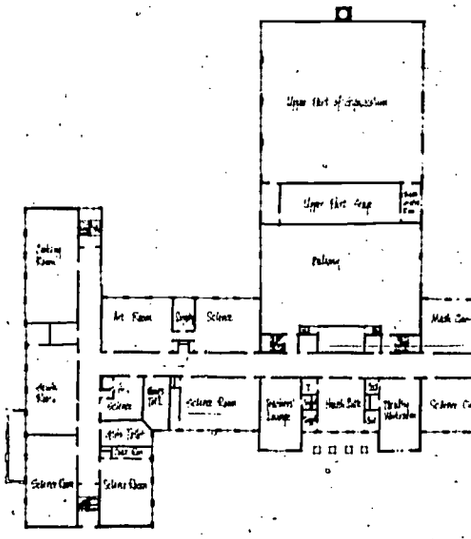
suggested



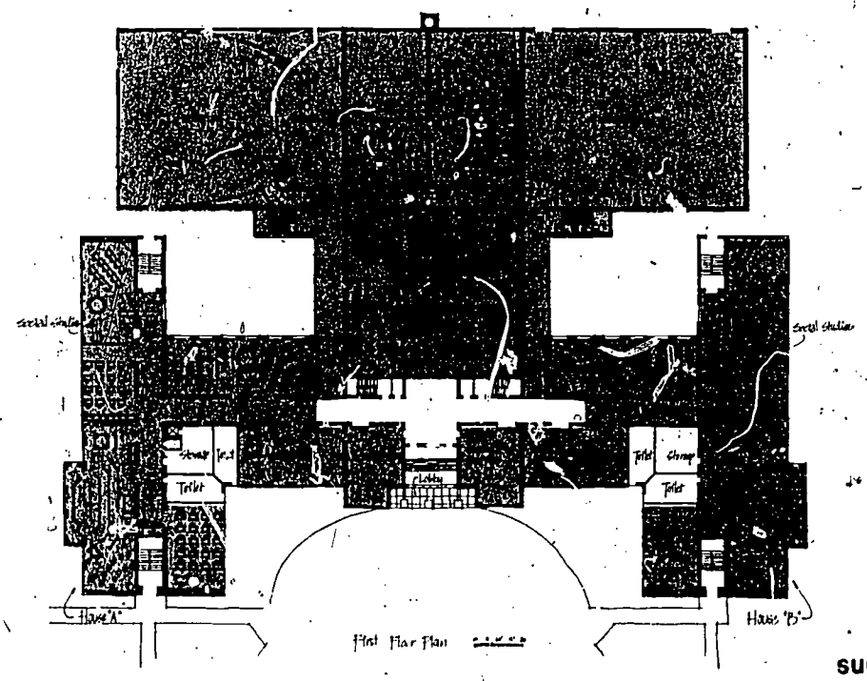


First Floor Plan

existing

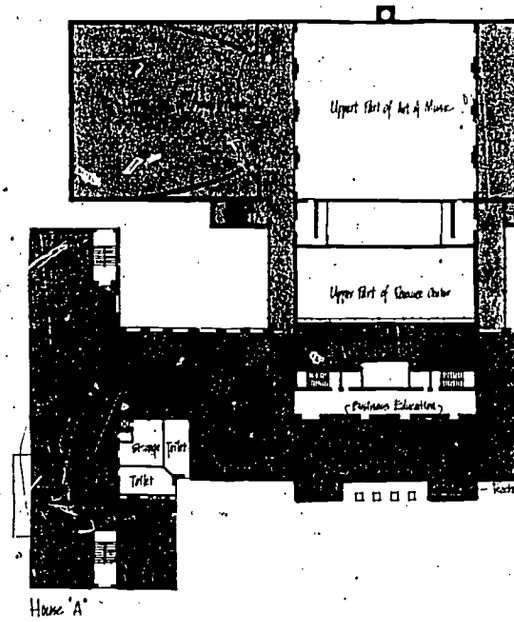


Second Floor Plan

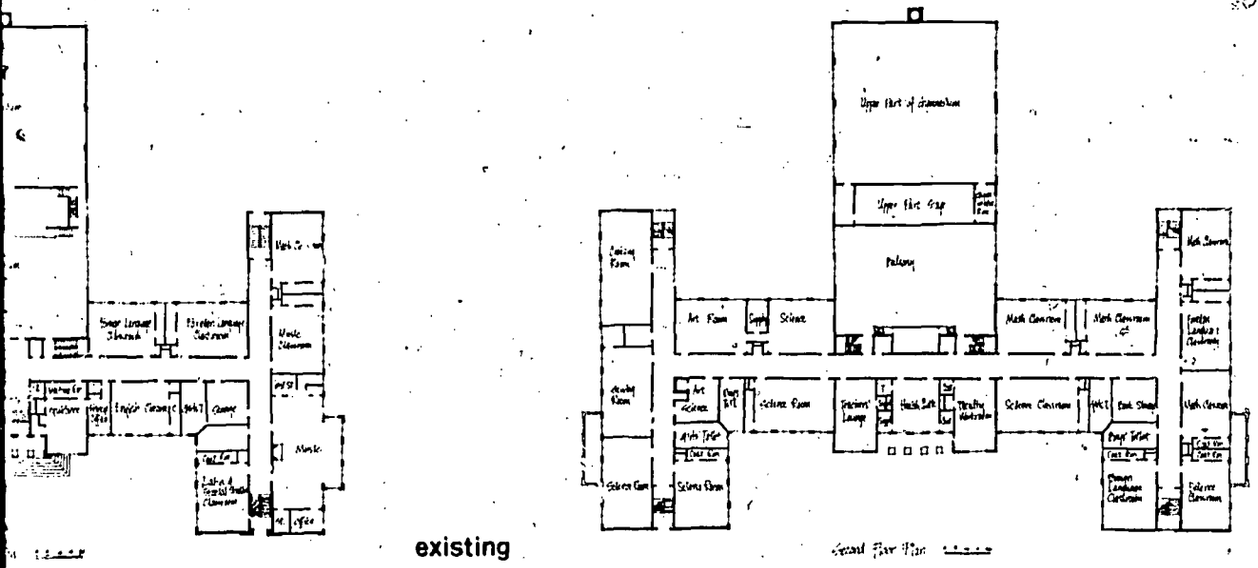


First Floor Plan

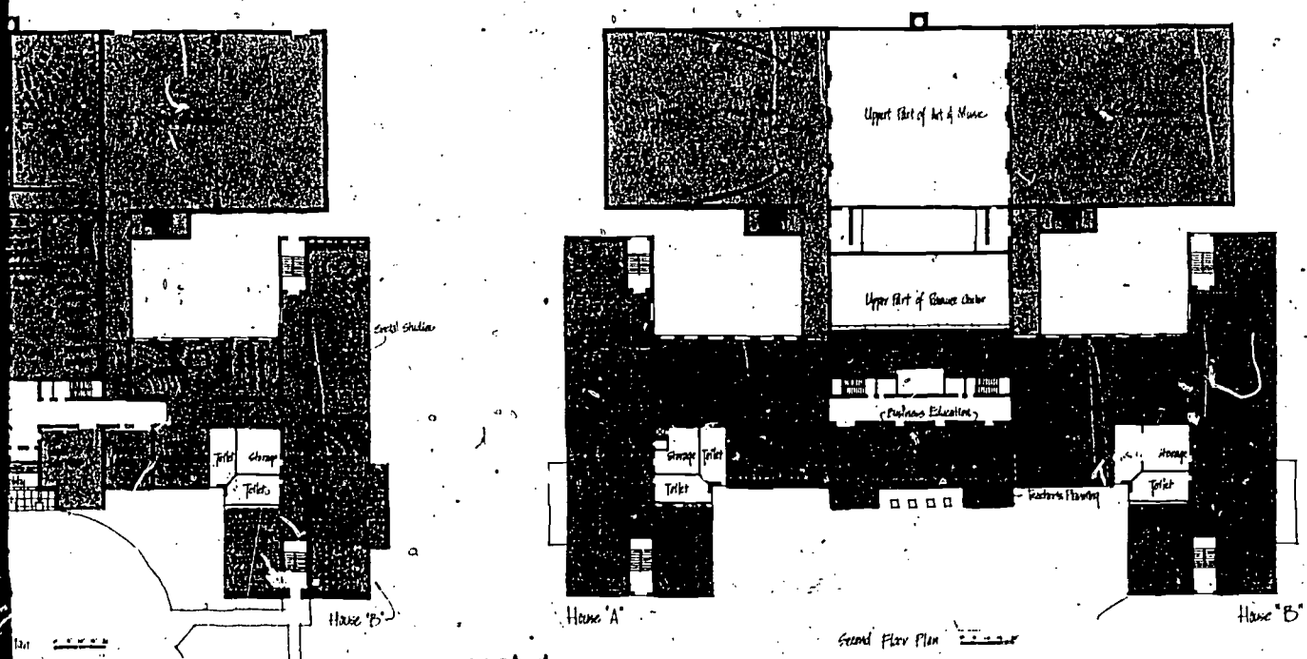
suggested



Second Floor Plan



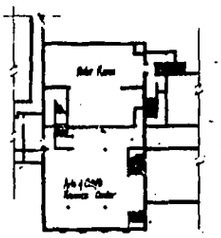
existing



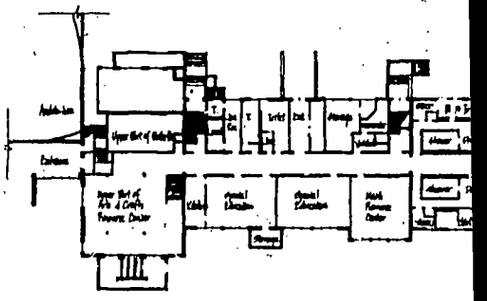
suggested

james talcott junior high school

The original structure was constructed in 1922, and additions were provided in 1940 and 1950. It is a two-story and basement building containing twenty-nine classrooms and two special education rooms.

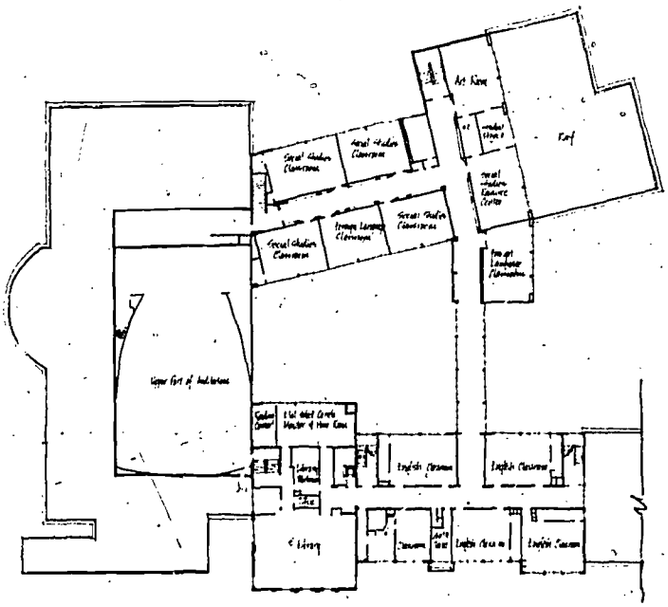


Basement Plan

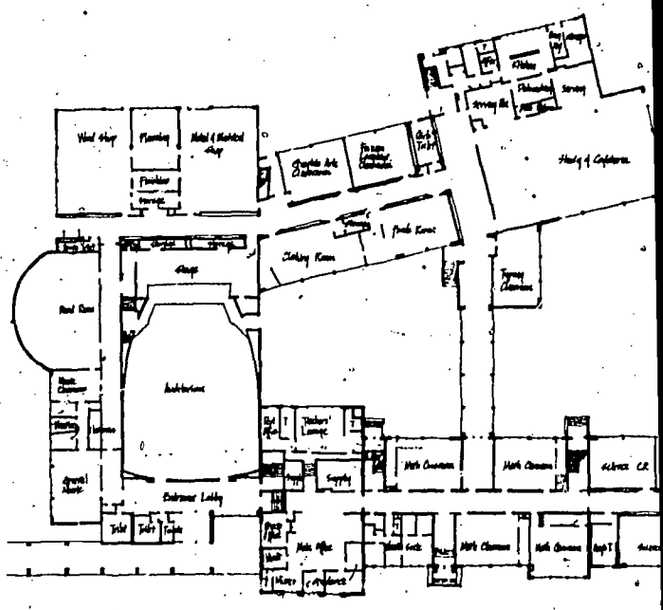


Ground Floor Plan

existing



Second Floor Plan



First Floor Plan

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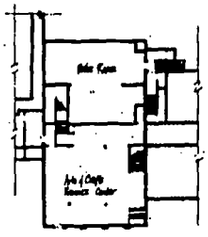
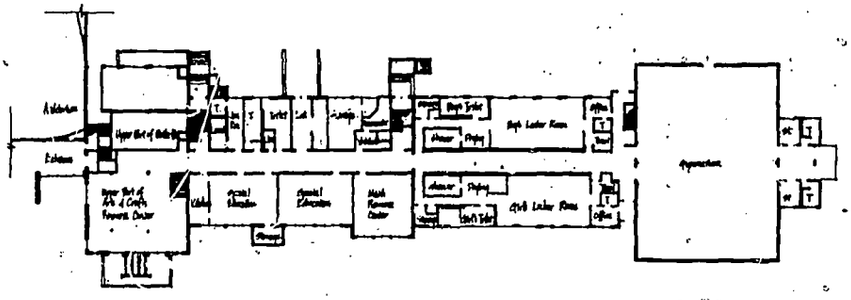
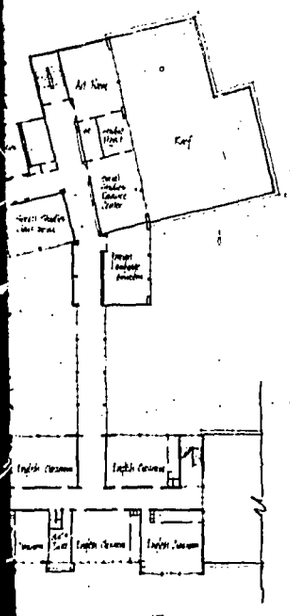


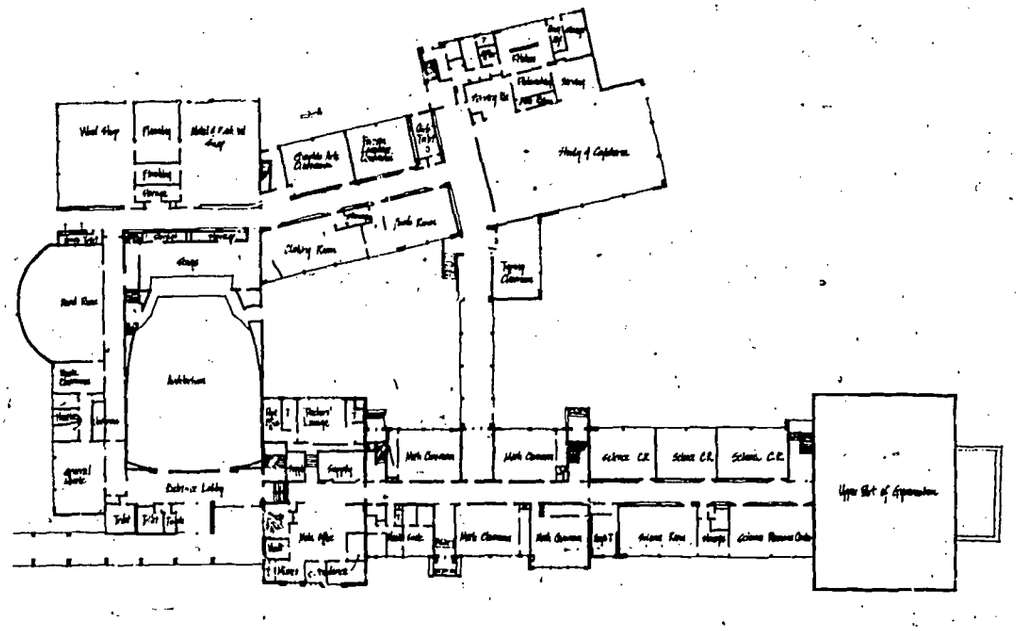
Basement Plan



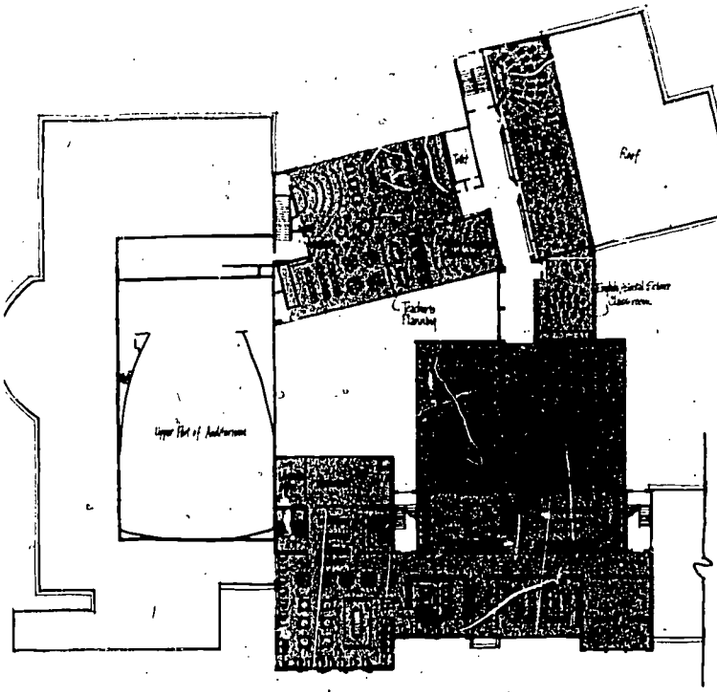
Ground Floor Plan

existing

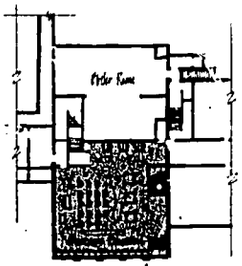




First Floor Plan

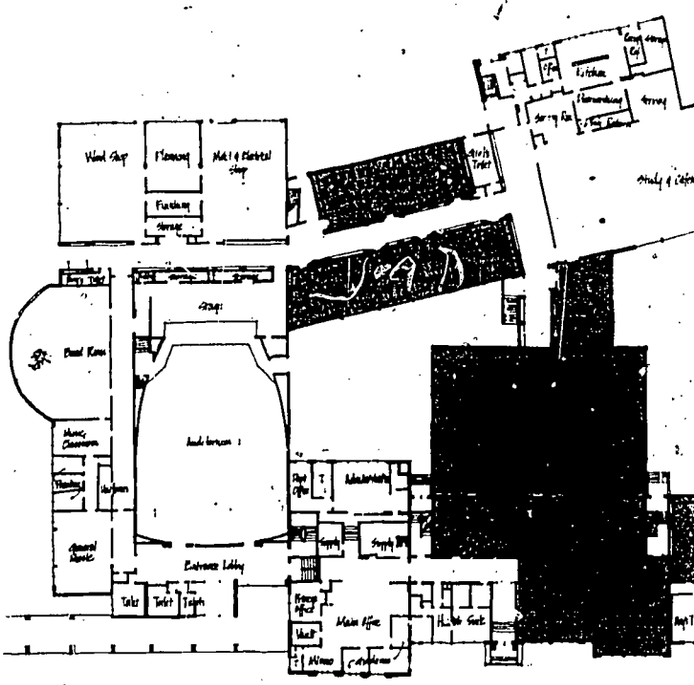


Ground Floor Plan

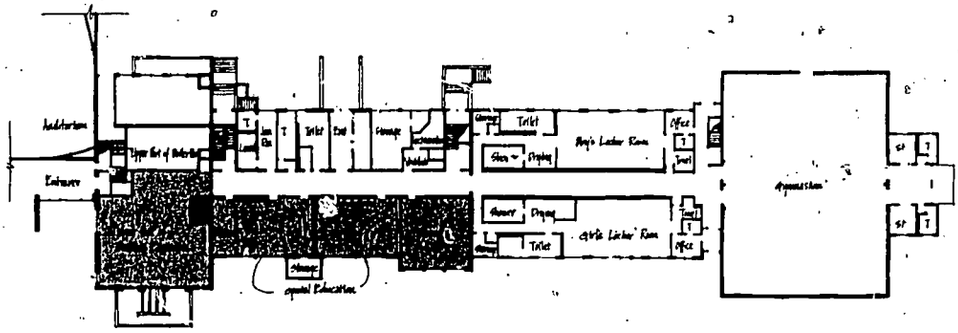


Basement Plan

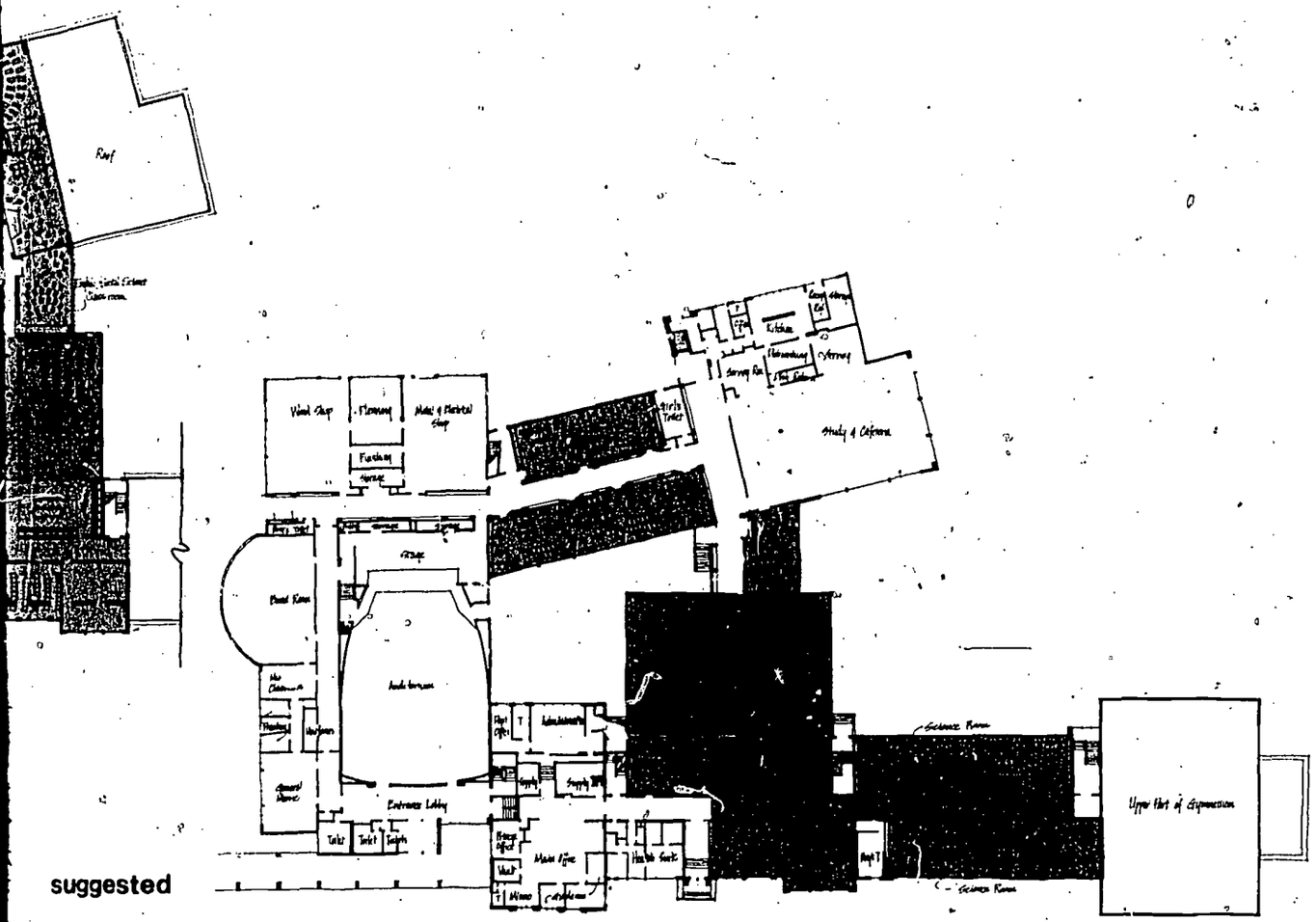
suggested



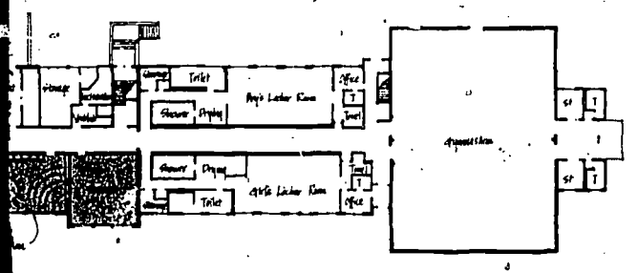
First Floor Plan



Ground Floor Plan



First Floor Plan



Ground Floor Plan

remodeled

addition

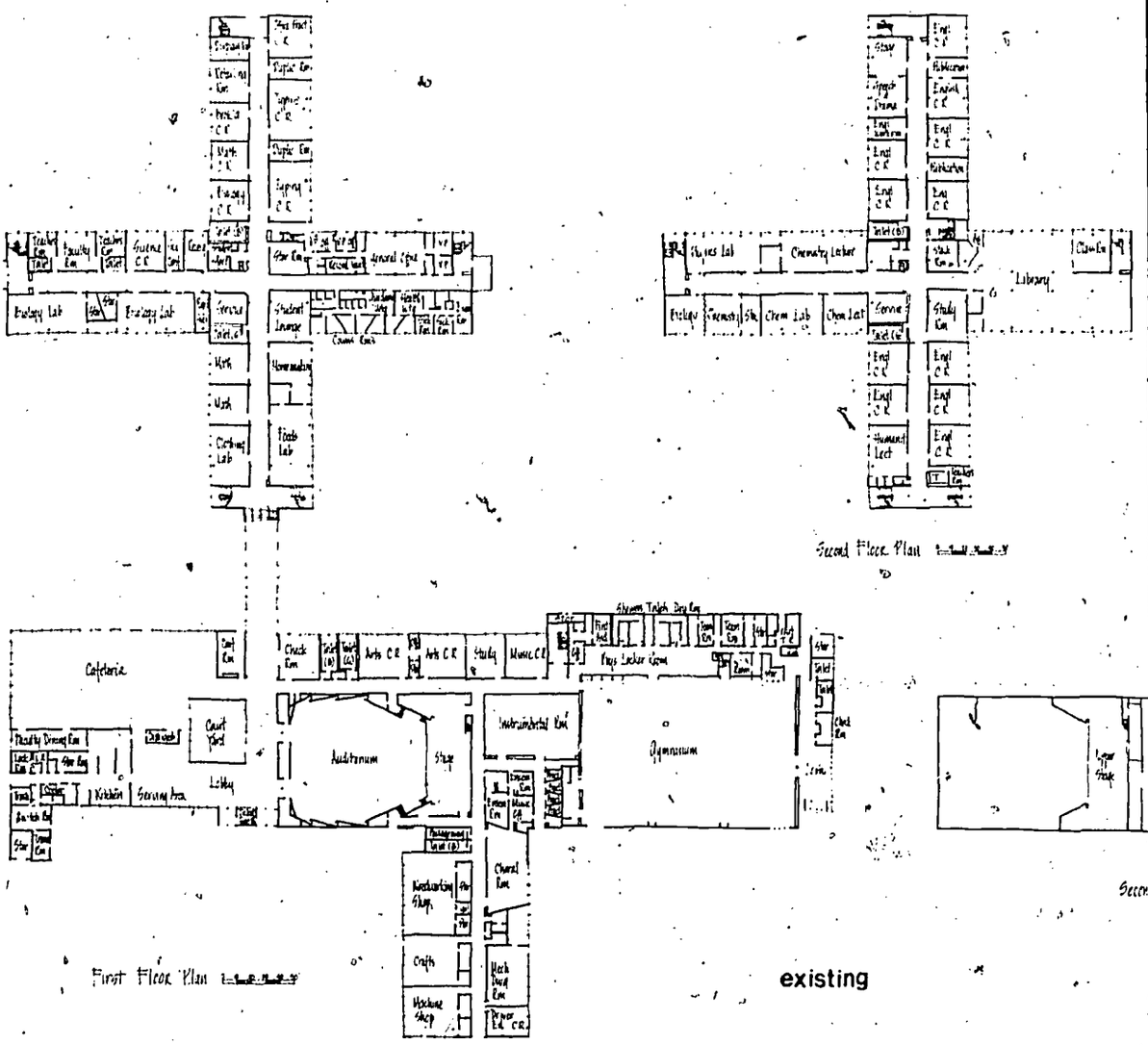
senior high schools

conard

ERIC

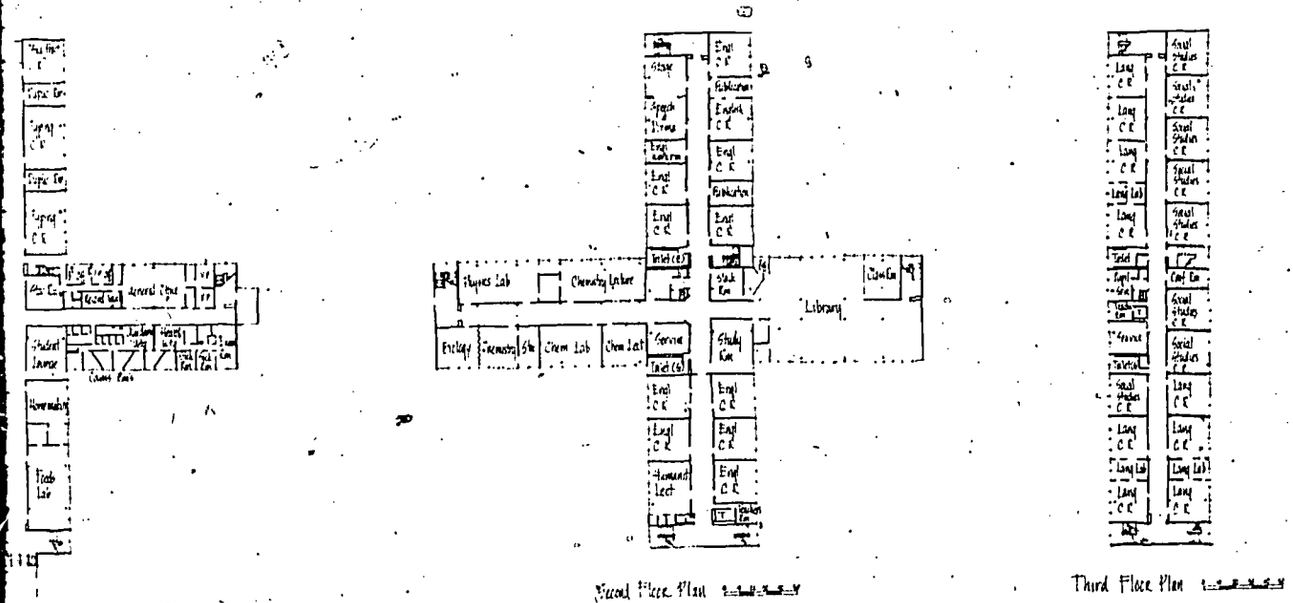
conard senior high school

Constructed in 1957, Conard High School is a three story building. It provides forty academic classrooms including some temporaries and thirty additional instructional spaces to meet the wide program.



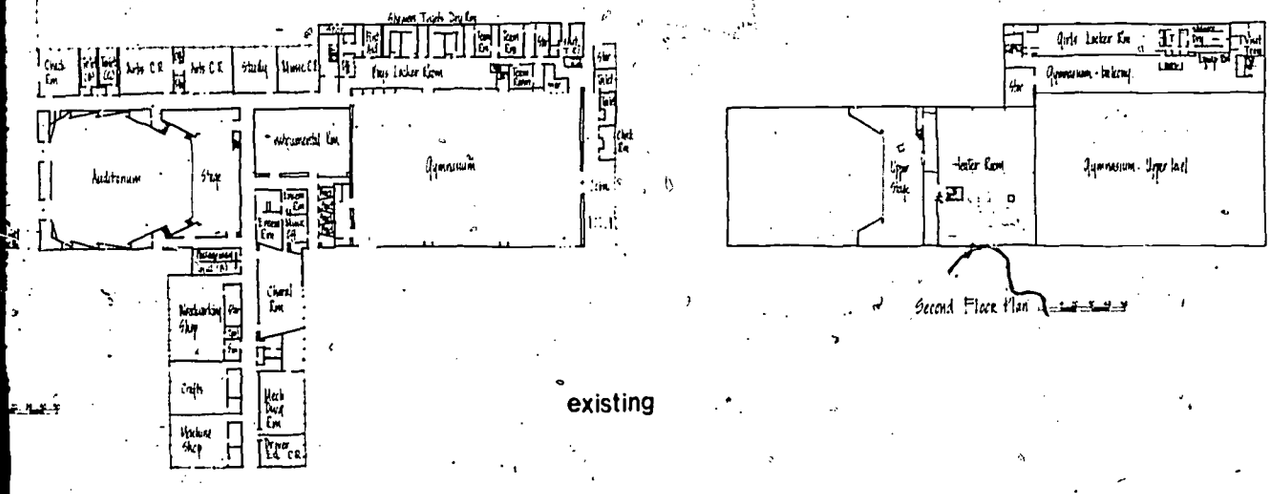
existing

Constructed in 1957, Conard High School is a three story building. It provides forty academic classrooms including some temporaries and thirty additional instructional spaces to meet the wide program.



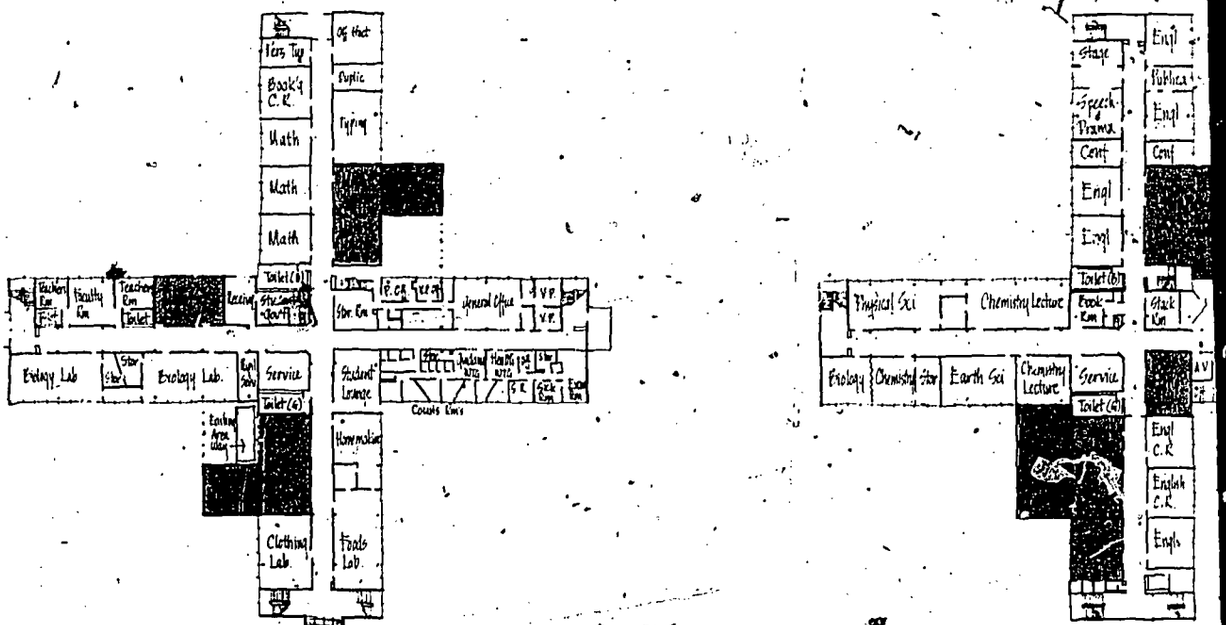
Second Floor Plan

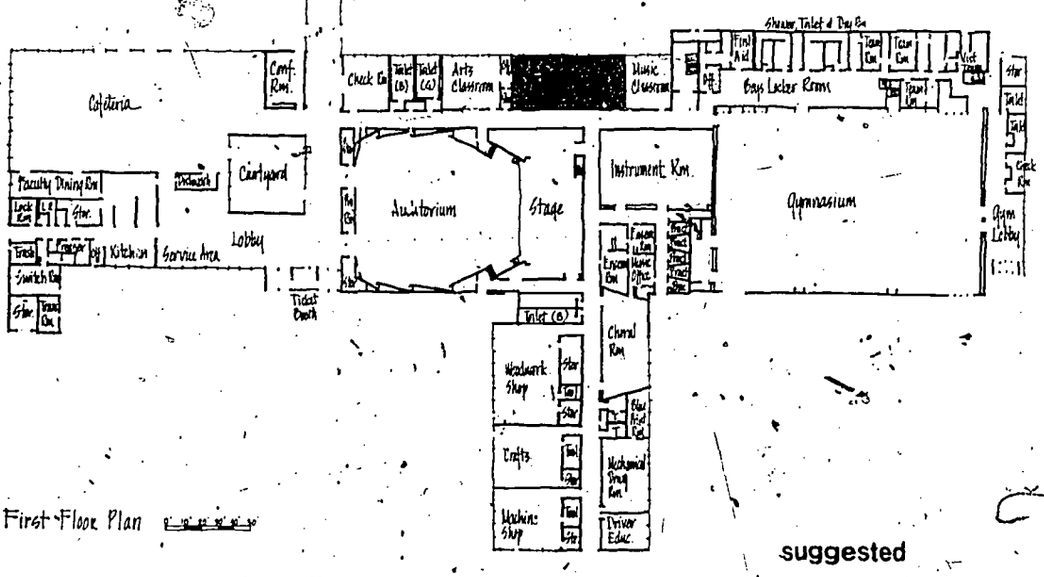
Third Floor Plan



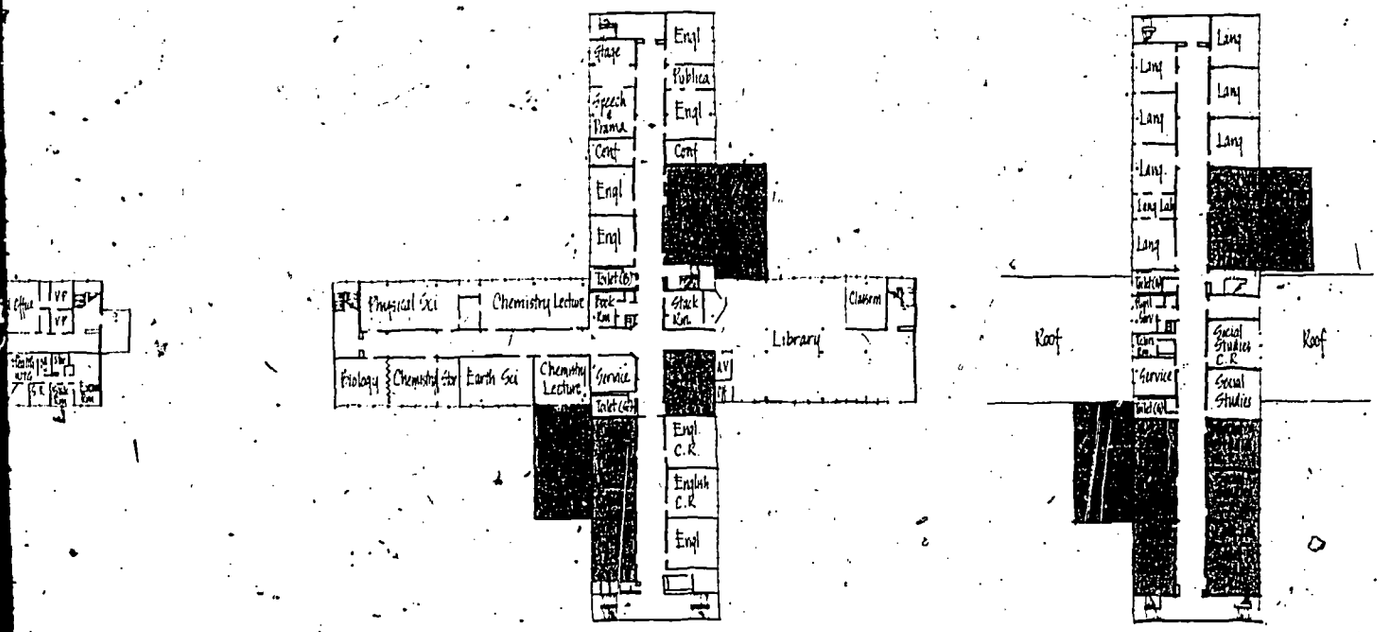
Second Floor Plan

existing



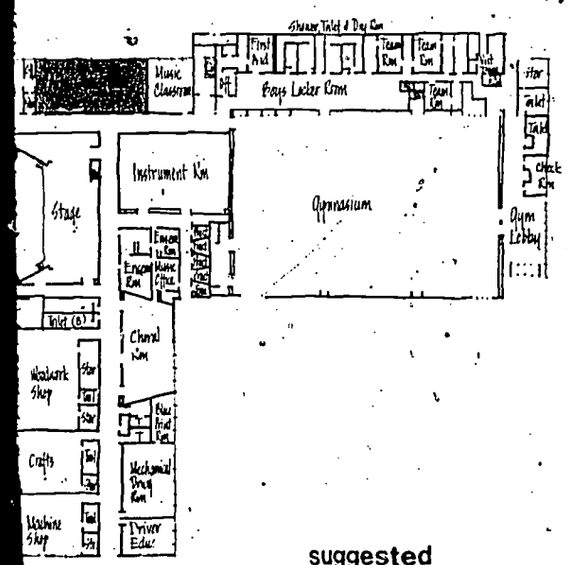


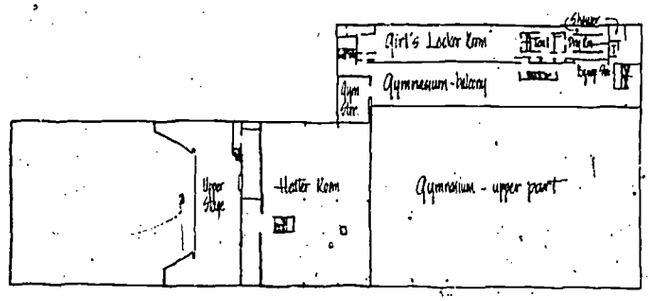
suggested



Second Floor Plan

Third Floor Plan





Second Floor Plan

remodeled

addition

suggested

credits

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A report prepared for the Board of Education of West Hartford, Connecticut by McLeod, Ferrara and Ensign, A.I.A., Architects/Planners, Washington, D.C.

The study and report were supported by a research grant from Educational Facilities Laboratories, Inc., 477 Madison Avenue, New York, New York 10022.

Brochure designed by Y.C. Chyun and J.E. Moyer.

Interior Design by Anne Overlin, NSID.

Photograph on page 16 by Fred J. Maroon.

Photographs on pages 6, 8, 9, 11, 13 and 20 by J. Alexander.

END